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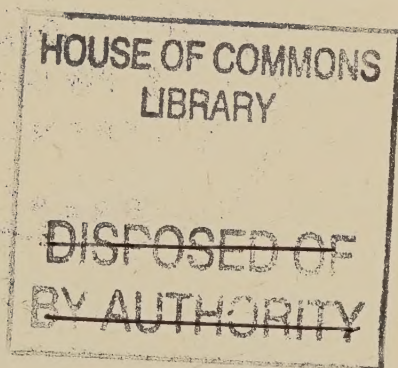
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HISTORY OF ARCHITECTURE

BY

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PREFACE

The object of this work is to outline, in a clear, concise, and definite manner, the national characteristics of the architecture of different countries at various periods of their history; in addition, to indicate some of the chief causes and influences that determined them. As these influences were mainly of a geographical, historical, religious, or sociological nature, it is evident that the proper understanding of the architecture of the past demands some acquaintance with the important historical events which led, more or less directly, to the political and social movements of the day, and were afterwards reflected in the changes wrought from time to time in the buildings of the period. Consequently, brief explanatory notes relative to the general history of the age, including some account of the state of civilization, have been prefixed to the descriptive matter dealing with the special characteristics of the architectural styles of each country.

The general description of the architecture of the period under discussion is followed by an analytical study of contemporary buildings. The details of these are examined at some length, and are supplemented by a series of photographic and other illustrations of the more important structures of the time, accompanied by descriptive notes.

As this work is primarily intended to be an elementary textbook for architectural students, the subject has been treated in simple language and readable form free, as far as possible, from all technical terms not defined or otherwise clearly explained by the context of the passage in which they occur. It is hoped that this short outline will succeed in stimulating the interest of the students in the great art of architecture, and cause them to seek that more extensive knowledge of the subject which can only be obtained from exhaustive works dealing in detail with the various periods of the art.

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CONTENTS

HISTORY OF ARCHITECTURE	<i>Section</i>	<i>Page</i>
Origin of Architecture	85	1
Egyptian Architecture	85	4
West Asiatic Architecture	85	30
Persian Architecture	85	42
Greek Architecture	85	49
Roman Architecture	85	93
Early Christian Architecture	85	137
Byzantine Architecture	86	1
The Middle Ages	86	25
Mohammedan Architecture	86	32
Romanesque Architecture	86	58
French Romanesque Architecture	86	66
German Romanesque Architecture	86	84
Italian Romanesque Architecture	86	100
Northern Italian Romanesque Architecture	86	103
Central Italian Romanesque Architecture	86	105
Southern Italian Romanesque Architecture	86	112
English Romanesque or Northern Architecture	86	118
Gothic Architecture	87	1
French Gothic Architecture	87	8
German Gothic Architecture	87	44
Italian Gothic Architecture	87	59
Belgian Gothic Architecture	87	75
Spanish Gothic Architecture	87	94
English Gothic Architecture	87	105
Gothic Secular Architecture	87	162

HISTORY OF ARCHITECTURE— <i>Continued</i>	<i>Section</i>	<i>Page</i>
Renaissance Architecture	88	1
Italian Renaissance Architecture	88	4
French Renaissance Architecture	88	67
German and Austrian Renaissance Archi- tecture	88	119
Belgian and Dutch Renaissance Architecture	88	134
Spanish Renaissance Architecture	88	142
English Renaissance Architecture	88	147
Recent English Architecture	88	194
Recent Continental Architecture	88	198
American Architecture	88	200

HISTORY OF ARCHITECTURE

(PART 1)

INTRODUCTION

THE ORIGIN OF ARCHITECTURE

DEVELOPMENT OF PRINCIPAL STYLES

1. Architecture Defined.—Architecture may be described as the art of building in a manner which not only endows a structure with its primary essentials, strength and convenience, but, in addition, enriches it with beauty of form and æsthetic detail. To this end, the arrangement or the plan of a building, its outline, the massing of its walls and roofs, the ratio of the solid walling to the voids or openings, and the application of carved enrichments or other forms of ornamentation, are determined, harmoniously combined and expressed, with the view of obtaining the distinctive architectural elements of stability, utility, and beauty.

2. First Efforts in Architecture.—As is the case with other arts, architecture had no existence at an early period of the world's history. Its origin, long lost in the mists of antiquity, was doubtless brought about by necessity, for it is clear that the first efforts of primitive man, in the construction of habitations, were induced by his need of protection against the inclemency of the weather and the attacks of ravenous beasts. But later, when a moderate degree of civilization had been attained, the idea of symmetry, proportion, and other architectural attributes

were evolved and embodied in material form in religious and, afterwards, in other buildings. Thus architecture grew, side by side, with the advancement of man, and so it comes about that its history reflects the manners, customs, and degree of civilization of nearly all the known periods of man's existence.

3. National Characteristics.—The study of the history of architecture resolves itself into the separate consideration of the great buildings, of past ages, which have been bequeathed to us by all civilized nations. For the forms and ornamentations of ancient structures, even when built to serve similar purposes, differed materially in each country. But, exactly as each nation spoke and wrote in a language of its own, so each built in a style that bore the national impress of its originators.

4. Primeval Remains.—The numerous remains of buildings erected by primeval man comprise (*a*) *monoliths*, or single upright stones; (*b*) *cromlechs* or *dolmens*, consisting of a large flat stone or table stone, supported by others placed vertically beneath it; (*c*) *stone circles*, such as those at Stonehenge and Avebury; (*d*) *tumuli*, or mounds of earth; and (*e*) *huts* built of rough stones in the form of *bee-hive caves*, and various types of underground dwellings.

In addition to ancient stone dwellings and temples, submerged remains of wooden huts, of great antiquity, have been discovered in the lake districts of various parts of Europe. These huts were built on wooden piles projecting well above the surface of the water, and are interesting records of prehistoric habitations of another type.

5. The Recordless Era.—Unfortunately there is a wide gap in our knowledge of the past, and its progress toward civilization, between the era of the cave dweller of remote primeval days and that which witnessed the dawn of the art of architecture on the banks of the Nile. For the earliest architectural structures of the past that have hitherto been discovered clearly belong to an age when the ancient Egyptians were well advanced in constructional knowledge, art, and general civilization, and the timber architecture of their predecessors had long since given place to monumental edifices of stone or granite.

6. Local Influences.—All historical styles of architecture have been more or less affected by specific influences which, causing lines of demarcation between the buildings of different nations, have produced characteristics peculiar to the architecture of each country. This divergence in the architectural efforts of various nations was due partly to the fact that the ancient buildings of each race of mankind were of a nature best adapted to withstand the special climatic and other conditions of the country to which they belonged, and partly to the nature of the materials of which they were constructed. But it was also, in a measure, the outcome of the national temperament of the inhabitants, of their religion, or the effects of conquests, commerce or colonization.

7. Examples of Climatic Influences.—Many interesting traces of the influence of climate will be found on comparing the architecture of countries which possess widely different temperatures. For instance, in tropical climates the interiors of the buildings are kept cool by the use of small windows and low-pitched or flat roofs, while boldly projecting eaves and cornices shade the sides of the building from the intense heat of the midday sun. And in more temperate climates, the flat roofs of southern nations give place to sloping ones, and larger openings are formed in the walls for the admission of more light. On the other hand, in northern countries, where there is comparatively little sunshine and light, the roofs of the buildings are made sufficiently steep to withstand the effects of snow and rain, and windows are large.

8 Influence of Available Materials.—The influence of local materials on the national architecture of a country is, usually, easily recognizable. Thus, where granite, the hardest of all building material, is readily obtained, the buildings, severe and simple in their architectural treatment, are in great contrast with the over-decorated and ornate structures to be seen in countries in which stone of a soft and easily worked nature is found. Refinement of detail, as evidenced by the use of minute carvings and delicately wrought mouldings, is common in countries in which marble is plentiful. Where stone is difficult to obtain, brick buildings predominate; and in thickly wooded countries such as Norway and Sweden, timber is used for most buildings.

9. **Classification of Styles.**—Every nation that has evolved an architectural style of its own occupies a distinct place in the history of art. Yet it is possible to class the different styles of buildings under one or another of four great groups which are differentiated by the use, singly or in combination, of two main systems of construction the elements of which consist of the lintel and the arch.

In the system known as the **trabeated**, openings in the walls of buildings are spanned either by beams of wood or by lintels of stone, but in the other system, known as the **arched**, they are covered by arches, sometimes semicircular and sometimes pointed in shape. Each of the historic styles of architecture can therefore be grouped under one of the following styles :

(a) The beam, or trabeated, as exemplified in Egyptian and Greek architecture.

(b) The round arch, as exemplified in Roman architecture.

(c) The pointed arch, as exemplified in Gothic architecture of all countries.

(d) Trabeated style and round arch in combination, as exemplified in buildings of the Renaissance period of all countries

EGYPTIAN ARCHITECTURE

NOTES ON EGYPT

GEOGRAPHICAL, HISTORICAL, AND SOCIOLOGICAL

10. **Geographical.**—Egypt, the cradle of the art of architecture and the seat of the earliest known civilization, is situated in a narrow valley near the point at which Africa approaches Asia, as seen from the map, Fig. 1. It consists of a long strip of land, sometimes not more than a mile and generally less than 10 miles in breadth, which covers a length, from the first cataract in the south to the apex of its broadened extremity in the north, called the *Delta*, of some 700 miles. By nature practically a rainless country, the valley which forms the habitable part of

Egypt is fertilized by the River Nile. The latter, flowing from its source in the remote equatorial highlands of Africa to the low-lying plain, brings with it certain fertilizing deposits with which it enriches the country on either side of its banks.

Protected by the Arabian and Libyan deserts, and thus comparatively free from the danger of invasion on its east and west boundaries; supplied by the great river with a convenient highway for internal communication between the more remote parts of the kingdom; and conveniently situated for access, both to the Mediterranean and the Red Sea, nature had done much for Egypt. Being, further, endowed with an equable climate and

equable productiveness, the ancient Egyptians soon became a prosperous, if somewhat isolated, people.

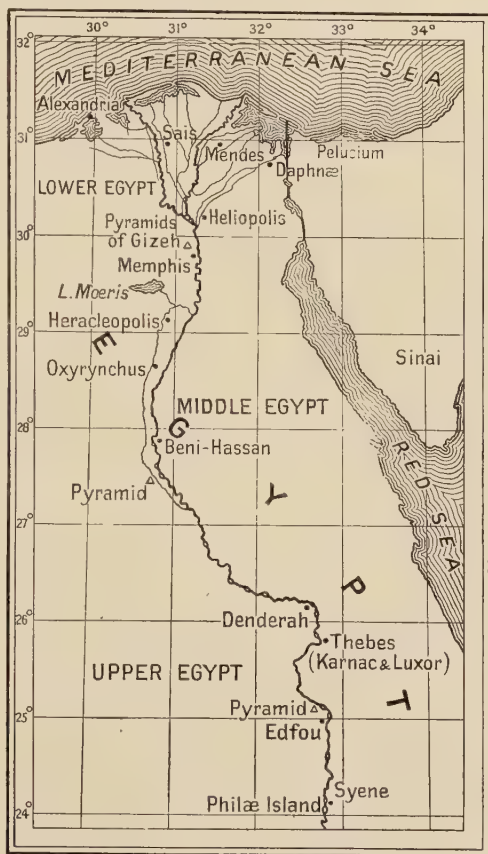


FIG. 1

11. Geological and Botanical.—The geology of Egypt is of a simple character. The flat country is of alluvial formation; the bordering hills of limestone in the north, sandstone in the centre, and granite and syenite in the south.

Timber is scarce in Egypt, as the country is but thinly wooded. Except fruit trees, such as the date and fig, sycamore and acacia are the only trees at all plentiful; but water plants, the lotus and papyrus, for example, grow in profusion.

12. Art, Science, and Handicrafts.—As the pioneers of civilization and the first teachers of mankind, the Egyptians were worthy of the fame they acquired in art, literature, and science. Their skill in art and the various handicrafts was extraordinary, and a vivid impression of the manner in which the Egyptians lived and worked can be gained from the immense number of pictures and reliefs which adorned the walls of Egyptian monuments and tombs. Among these decorative records of Egyptian life are some illustrating the various processes of agriculture, such as ploughing, sowing, and gathering the harvest. Some deal with vine culture and the vintage, and others have reference to art workers and handicraftsmen. In the latter series of illustrations the operations of painters, sculptors, architects, workers in stone and wood, potters, blacksmiths, curriers, spinners, weavers, glass-makers, enamellers, and goldsmiths are elaborately depicted.

13. Government.—The Government, an absolute monarchy, was identified with the religion of the country, as shown by inscriptions on monuments, which are often dedications to deified kings. Theoretically, at least, there were no limits to the power of the King, whose authority was supposed to be derived directly from the gods.

Worshipped as the Sun God, head of the religion, commander-in-chief of the army, judge and law-giver, the will of the King was supreme in all departments of the administration. Next in importance were the priests who, as the learned and cultivated class, preserved the monopoly of the arts and sciences they had originated, and became the lawyers, physicians, sculptors, architects, and royal chroniclers of the country. The offices of the military forces were hereditary and, in combination with the priests, the heads of the army possessed the land and formed part of the governing class of the community. Military conscription and forced labour for the execution of all works of public utility were exacted from the people.

14. Religion.—The Egyptians' conception of the Deity is shown by the following words: "He that lives in spirit, sole generating force in heaven and earth, that was not begotten." But this fundamental idea of the existence of God was debased and complicated by the worship of numerous gods and goddesses, and by the strange honours paid to sacred animals, namely, cats, crocodiles, serpents, and the bull Apis. Abydos was the seat of the worship of Osiris, the god of death and resurrection, a cult which largely influenced the religious opinions of the whole country. These opinions included the belief in man's existence after death through the immortality of his ghost, or double, called *Ka*. Thus, after the death of a man it was thought necessary to preserve the body to enable the *Ka* to retake possession of it at any future time, and to place a statue or portrait of the deceased in the tomb that the *Ka* might find in it those individual features which the body had lost. Finally food and drink had to be provided for the use of the *Ka*, and these were accordingly placed on a table for offerings set up in the tomb. In consequence of this strange belief the Egyptians mummified their bodies, built indestructible places of sepulture, established endowments for sacrifices to the dead, and preserved statues and household gods in the tombs.

15. Historical.—In addition to the monumental tombs, with their vast array of historical and other records, extracts have been preserved from the writings of Manetho, an Egyptian priest, living in the third century B.C., who compiled a history of his country. Manetho grouped the monarchs of Egypt under some thirty dynasties, but considerable doubt has been thrown upon the accuracy of his chronology. Although other information, more or less reliable, relative to Egyptian history has been obtained from various ancient papyrus manuscripts, yet the question of the exact antiquity of Egypt still remains a matter for controversy.

Tradition assigns the commencement of the Egyptian monarchy to a certain Menes, who, at a remote date, founded a dynasty at This. The first dynasty, which, according to Manetho, lasted for 253 years, was followed by a second Thinite dynasty

of kings, who reigned for 302 years. The sovereignty was then transferred to Memphis, where the kings of the third dynasty reigned for 214 years. There is no clear evidence of the actual existence of these dynasties; authenticated Egyptian history commences, therefore, with the reign of Sneferu, the founder of the so-called fourth dynasty at Memphis.

16. Even at that remote period, which Erman places at 2830 and Professor Rawlinson at 2500 B.C., civilization had already been developed to a considerable extent. Hieroglyphic writing had been invented, numerous pyramids built, great progress made in the arts of sculpture and engraving, and comfortable houses of wood or stone were in existence. Three kings of the fourth dynasty are especially notable for their monumental efforts in pyramid building, namely, Khufu, or Cheops, the second monarch of the dynasty, who erected the Great Pyramid of Gizeh, near Memphis; Shafra, or Chephren, who built the Second Pyramid and the temple of the Sphinx and probably carved the colossal Sphinx at Gizeh; and Menkaura, or Mycerinus, who commenced the Third Pyramid.

17. The following dynastic periods are of special importance in the political and general history of the country :

Dynasties IV and V, from about 2830 B.C.	} The Old Empire.
Dynasty VI, from about 2530 B.C.	
Dynasty XII, about 2130 B.C.	} The Middle Empire.
Dynasty XIII, about 1930 B.C.	
Dynasty XVIII, about 1530 to 1320 B.C.	} The New Empire.
Dynasty XIX, about 1320 to 1180 B.C.	
Dynasty XX, about 1180 to 1050 B.C.	

The seven kings of the fifth dynasty governed from Memphis and continued to build pyramids and tombs which, however, were designed upon a far less magnificent scale than those of their predecessors of the fourth dynasty.

In the sixth dynasty the centre of government was transferred to Abydos. This dynasty was notable for the completion of the third Great Pyramid at Gizeh. Following long lines of obscure kings who, owing to the troublous times in which they lived, left few monuments and buildings, came the famous invasion

of the Shepherd Kings, a foreign race of monarchs, probably Hittites, who ruled Egypt during the period known as the Middle Empire.

18. The founder of the eighteenth dynasty expelled the Shepherd Kings and reinstated a native monarchy at Thebes, where he and his successors ruled during the period known as the New Empire. In the course of this dynasty the two great Colossi were set up at Thebes and the temple of Ammon built at Luxor. In the succeeding dynasty, Manetho's nineteenth, the great pillared hall at Karnak was built by Seti I, who also erected numerous temples and commenced the construction of a fresh-water canal between the Nile and the Red Sea.

Seti's son, Ramesu II, or Rameses, was a distinguished monarch, and during his reign many great architectural and engineering works were carried out. The unfinished canal, connecting the Nile with the Red Sea, and the Ramesseum were completed by this king, who also built three cities, adorned the temples of Thebes and Heliopolis with obelisks and that of Phthah with colossi and pylons, and constructed a great wall to protect Egypt from the east. In these, as in other great Egyptian buildings, the forced labour of prisoners of war and slaves was employed.

Rameses III, the second king of the twentieth dynasty, built a magnificent temple at Medinet-Abu and encouraged trade. His successors were undistinguished and feeble monarchs under whom the power began to pass from the king to the priests, who founded a dynasty of their own order. At a later period the Ethiopians extended their sway over southern Egypt.

19. The last period of independent Egyptian history was marked by a singular recovery of national vigour under Psamatik I, or Psammetichus, the founder of the twenty-sixth dynasty, who, aided by Gyges, King of Lydia, established himself as king over the whole country in 655 B.C. Under this monarch great architectural projects, that had remained in abeyance since the time of Rameses III, were resumed, the temples at Thebes and Medinet-Abu were restored, and large buildings were constructed at Sais, Mendes, Philæ, and Heliopolis.

Psamatik III, the last king of this dynasty, was defeated by the Persians at Pelusium in 527 B.C., and Egypt became a province of Persia.

After the death of Alexander the Great, Egypt fell into the hands of Ptolemy, who was crowned king in 306 B.C. The Ptolemaic dynasty lasted for nearly three centuries, namely, to the death of Cleopatra, in 30 B.C., when Egypt came under the dominion of the Roman Empire.

CHARACTERISTICS OF EGYPTIAN ARCHITECTURE

PRINCIPAL FEATURES

20. Pyramidal and Columnar Architecture.—The main idea embodied in the religion of the Egyptians, namely, that of life after death, found material expression in Egyptian forms of art. For instance, in the pyramid which represents the earliest example of Egyptian architecture, the temptation to employ decorative detail is repressed and subordinated to the desire to construct a monumental tomb of an imperishable nature, gigantic in size, and impressive by its majestic severity. And this aspiration is also apparent in the rock-cut galleries, temples, and tombs of later times.

21. Early examples of columnar architecture are to be seen among the temples of Egypt, where the constructional necessity of providing intermediate supports for the immense horizontal blocks of granite, or stone, with which the spacious halls were roofed, led to the introduction of columns or pillars. At the Ramesseum, and in some other temples, the supporting columns were placed on massive foundations of crude brickwork some 10 feet in depth. The stonework, dressed more or less carefully according to its position in the building, was sometimes built with dry joints and kept stationary by the mere weight of the material above it; but more commonly mortar was used. As it had scarcely any projections and few voids or openings, the walling was remarkably free from sharp edges, termed *arrises*, either of a horizontal or vertical kind. Arrises formed at the junction

of the external walls were generally finished with a vertical ornament which took the form of a large enriched, convex moulding, known either as a *torus*, or a bead. An effectively designed cornice, consisting of a large *cavetto*, or hollow moulding, surmounted by a fillet, or small square band, generally crowned the façade the walls of which tapered inwards. Although traces of brick arches have been found in fragmentary remains of unimportant buildings, yet the principles of arch construction never seem to have been applied to the ancient monumental structures of the country, and, in other respects, the expenditure of labour and materials was often disproportionate to the result achieved.

EXAMPLES OF EGYPTIAN ARCHITECTURE

TOMBS AND TEMPLES

22. Pyramids.—Among the existing examples of Egyptian architecture two types of buildings predominate, namely, the

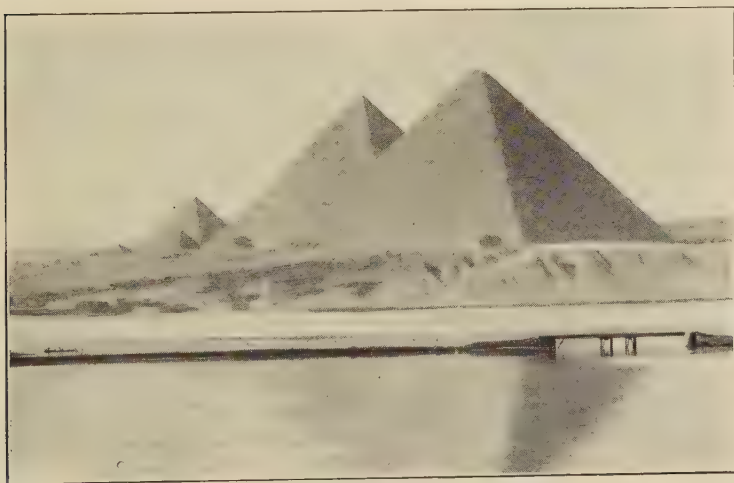


FIG. 2. PYRAMIDS AT GIZEH

monumental tombs of the kings and temples of various sizes and forms of construction. Of the sixty or seventy pyramids to be

found in Egypt, three of the most important are among the group of pyramidal buildings constructed, on the banks of the Nile, in the neighbourhood of Gizeh, and shown in Fig. 2. Of these three the largest and oldest, known as the Great Pyramid of Cheops, Fig. 3, is the most gigantic work in the world. It was erected in the fourth dynasty by King Cheops, who, with due regard to the national belief that the tomb, as the home of the dead,



FIG. 3. GREAT PYRAMID OF CHEOPS

ought to be arranged in a manner to ensure the well-being and preservation of the body placed within it, made the chamber containing the sarcophagus difficult of access.

From the external entrance of the pyramid an inclined passage *a*, Fig. 4 (*a*), some 317 feet in length, 4 feet in height, and $3\frac{1}{2}$ feet in width, leads downwards to an unfinished chamber, cut in the rock, centrally placed under the base of the structure. But this basement chamber was probably only constructed with the view to misleading would-be spoilers of the royal tomb, for the sepulchral chamber is in the very heart of the pyramid. It is approached by an ascending passage which is connected with the descending one at a distance of some 62 feet from the external entrance. The ascending passage *b* divides into two branches, one of which proceeds, in a horizontal direction, to a limestone

room *c*, known as the Queen's Chamber, placed in the central part of the pyramid, approximately at the level of the entrance doorway. The other branch of the ascending passage continues its upward course in the form of a gallery 148 feet in length and

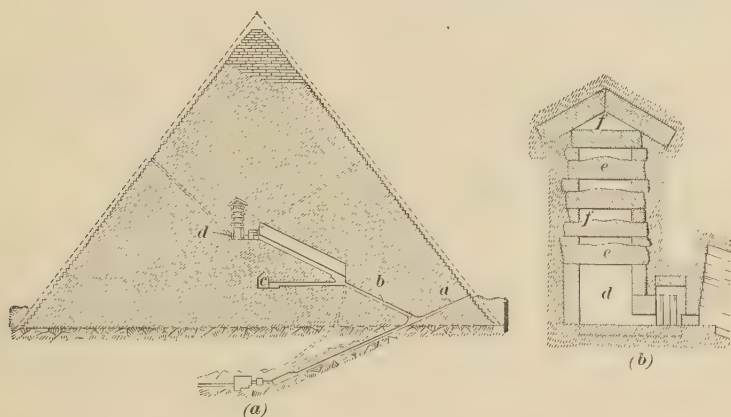


FIG. 4

28 feet in height. Beyond this gallery a short horizontal passage leads, through an intervening lobby, to the royal sepulchre *d*, a granite chamber with a flat roof, 34 feet long, 17 feet wide, and 19 feet high. The gallery and chamber are both lined with blocks of granite, beautifully worked and fitted.

23. Every precaution was taken to prevent the great weight overhead from crushing in the gallery and chamber by carrying up their side walls and bridging them over, above the ceilings, with five immense granite lintels *e*, in the manner shown in Fig. 4 (*b*). The small chambers *f* thus formed one above the other protect the ceilings of the rooms below and assist in distributing the weight of the superincumbent mass.

The original dimensions of the Great Pyramid have been reduced by the ravages of time, but, as built, the sides of the square base were 760 feet in length and its total height, from ground to apex, 480 feet. As is customary with pyramids, the sides of this huge structure faced the cardinal points, and its entrance, placed at a height of about 47 feet from the ground, was from the north.

The Second Pyramid, which stands close to the Great Pyramid, covers a square having sides about 707 feet long, and the Third Pyramid, that of Menkaura, a square the area of which is about half that of the Great Pyramid.

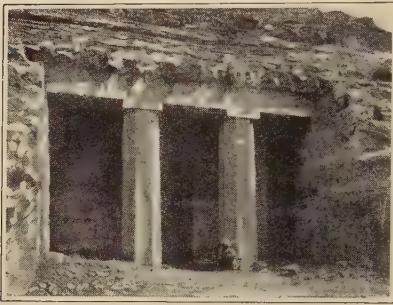


FIG. 5. TOMB AT BENI-HASSAN

mastabas, meaning platforms, are quadrangular in shape. In

24. Mastabas and Other Tombs.—Other ancient monumental tombs found in the necropolis of Memphis and called by the Arabs

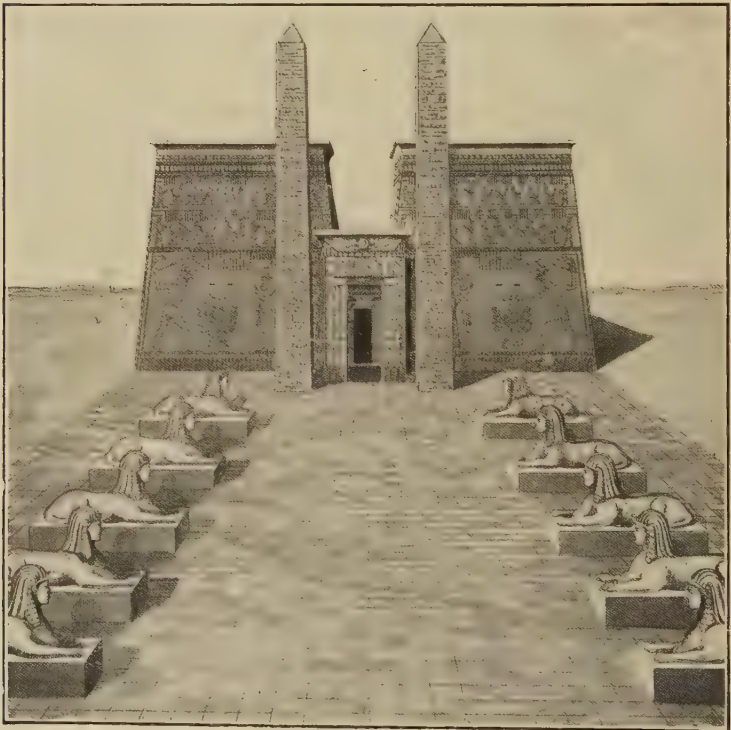


FIG. 6. SPHINX AVENUE BEFORE THE TEMPLE OF EDFOU

these, as in other tombs belonging to the ruling classes, the internal arrangements correspond with the Egyptian idea of the after-life, already described. Externally mastabas bear some resemblance to truncated pyramids, as the faces of the walls are symmetrically inclined, generally in one plane but occasionally in stepped courses, toward the low flat roof. The latest mastabas belong to the twelfth dynasty.

Other tombs of an altogether different type, known as *rock-cut tombs*, consist of a chamber hewn out of the solid rock without any attempt at forming an architectural edifice. But some of the rock-cut tombs at Beni-Hassan have architectural façades the columns and entablatures of which have been hewn out of the face of the rock in the manner shown in Fig. 5.

25. Temples.—As examples of the artistic skill and scientific knowledge of their constructors, Egyptian temples are pre-eminent. The earliest temple consisted of a small rectangular chamber, or sanctuary, to which only priests were admitted, containing an altar for sacrifices, and in some cases a statue of the god to which it was dedicated. Its one-entrance doorway was placed in the front wall of the building.

Temples of a later date were built on a much more elaborate plan, small rooms, intended for the storage of the sacrificial and ceremonial objects, being

grouped round the sanctuary, and, in advance of this block of buildings, there were one or more pillared halls. Beyond the halls was a colonnaded courtyard, in which the priests and

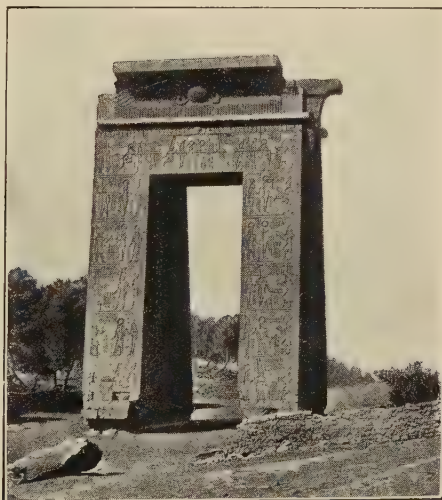


FIG. 5

worshippers were accustomed to assemble, approached through a central gateway flanked by two massive tower-like structures

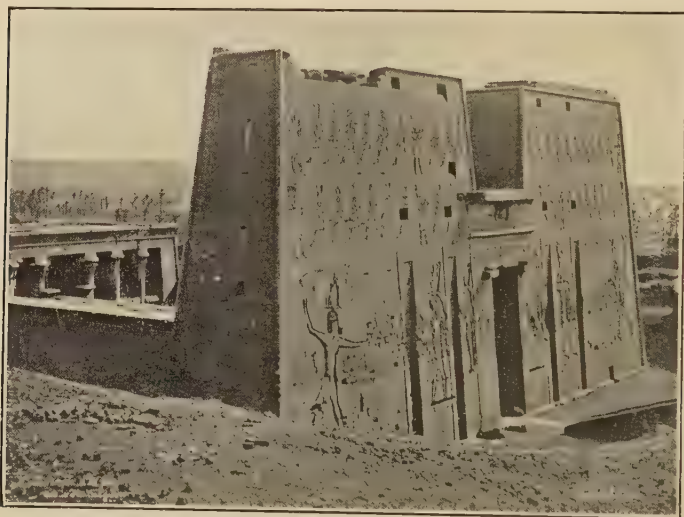


FIG. 8. TEMPLE OF EDFOU. FRONT VIEW



FIG. 9. TEMPLE OF EDFOU. INNER VIEW

with battering walls, called *pylons*, as shown in Fig. 6. A long avenue bordered with sphinxes led to the outer courtyard.

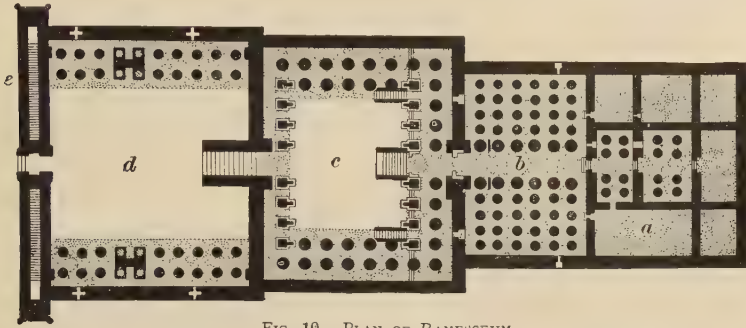


FIG. 10. PLAN OF RAMESSEUM

Sometimes, instead of the double-pylon entrance, the doorway took the form of a single pylon or gateway known as a *propylon*, and in some of the temples of a later period of art



FIG. 11. HYPOSTYLE HALL AT KARNAK

propylons were set up to form gateways to the avenue approaches, as in Fig. 7.

A lofty boundary wall generally surrounded the vast array of buildings that comprised the later temples of the Egyptians.

As each king was free to erect a hall in front of that built by his predecessor a successive series of sumptuous chambers, pylons, and porticoes was added, from time to time, as piety or vanity prompted their erection.

26. The temple of Apollinopolis Magna, or of Edfou, in Upper Egypt, illustrated in Figs. 8 and 9, although of the later Ptolemaic period, is in every respect characteristic of the style and arrangement of earlier Egyptian temples. Fig. 8 shows the front of a pyloned gateway, as seen from the outside of the temple, and Fig. 9 the gateway as viewed from the inner courtyard.



FIG. 12. OBELISK FROM TEMPLE OF HELIOPOLIS

Externally, the most imposing part of the temple, known as the Ramesseum, Fig. 10, consists of the pyloned entrance *e*, the central doorway of which leads into a great square courtyard *d*, which has colonnades on two sides. Beyond the first court is the inner court *c*, which is surrounded by ranges of lofty columns and square piers relieved with colossi.

At *b* is a hall, the roof of which is carried on columns, called the *hypostyle hall*. Here, as in similar buildings, this hall has rows of columns of varying size, the more massive central ones being carried up to a greater height than the others to form an upper story, known as a *clerestory*, pierced with openings for the purpose of

admitting light and air to the centre of the hall. Beyond the hypostyle hall several subordinate chambers are ranged round the sanctuary. The precise object of these rooms has not been ascertained, but as an Egyptian temple was used for royal

sacrifices to the gods, and the people were accustomed to assemble there to worship the king who, half priest, half monarch, was regarded as the earthly representative of the gods, it may be assumed that these rooms formed the royal apartments.

27. The usual arrangement of the hypostyle hall will be clearly understood by reference to Fig. 11, which is taken from a model of the hall at Karnak. In this illustration *a* denotes the rows of massive columns which support the clerestory roof and *b* the beams connecting the columns longitudinally and supporting the flat-stone roofing slabs *c*. The smaller columns *d*



FIG. 13. SPHINX AT GIZEH

are connected transversely by the lintels *e*, and longitudinally by the lintels *f*, which support the lower roofs *g*. These roofs are placed below the central one to enable openings *h* for light to be formed in its vertical portions. Although modified by local tradition, the chief characteristics of temples constructed in the ordinary way are also found in most of the rock-cut temples of Egypt.

28. **Obelisks.**—Egyptian obelisks cut from a single block of granite are quadrilateral in section, the width diminishing gradually from the base to the top of the shaft which is terminated by a small *pyramidion*, or pyramid-shaped apex. Placed on

plain square pedestals they were usually set up in pairs in front of pylons. The height of the shaft was generally about ten times its thickness at the base, and its four faces were usually adorned with hieroglyphic inscriptions. Fig. 12 illustrates one of a pair of obelisks, about 68 feet in height, which formerly stood at the entrance of the temple of Heliopolis. The obelisks of the temple of Luxor were over 75 feet in height, but the loftiest one known is that of Queen Hatshepsu at Karnak, which is no less than 109 feet in height.

29. **Sphinxes and Colossal Statues.**—The sphinx, the emblem of royalty, was of three kinds, namely: (a) the *andro-sphinx*,

which had the head of a man and the body of a lion; (b) the *crio-sphinx*, with the head of a ram and the body of a lion; and (c) the *hieraco-sphinx*, with the head of a hawk and the body of a lion.

The Great Sphinx in front of the pyramids at Gizeh, shown in Fig. 13, originally presented the appearance of an enormous crouching andro-sphinx. Between its huge paws was a small temple approached by a flight of steps and constructed of plain monolithic blocks of granite. With the exception of the forelegs, which were made from separate blocks, the whole of this



FIG. 14. STATUE OF MEMNON, THEBES

huge monument was cut out of the solid rock.

Many of the colossal statues of Egyptian kings were of gigantic size. For example, the seated figure of Rameses, at the Ramesseum, was 60 feet, and that of Memnon, at Thebes, Fig. 14, 53 feet in height.

DETAILS OF BUILDINGS

WALLS, ROOFS, COLUMNS, AND ORNAMENTATION

30. Plans.—The plans of Egyptian buildings were almost invariably rectangular in form, other geometrical figures, such as the circle or octagon, being studiously avoided. But, despite the use of straight lines, there was much irregularity displayed in setting out the plans, the walls being seldom placed at right angles to each other. The arrangement of the temples was not one that lent itself to external display, but internally the dimly lighted halls and innermost chambers of perpetual night produced a deep feeling of mystery and awe. In addition the external adjuncts of the temple, such as the long avenue of sphinxes, huge obelisks, towering pylons, and arcaded courtyards, had an air of stately grandeur and formed a fitting counterpart to the impressive gloom which prevailed within.

31. Walls.—Granite, stone, and brick were used by the Egyptians for the walls of their buildings, which were enormously thick. The stone-facing blocks were carefully worked and skillfully bedded and jointed.

32. Roofs.—The ordinary roofing consisted of flat slabs of stone, supported, when the area to be covered was large, by immense beams, or trabeations, of stone or granite which rested on the walls of the building and, where necessary, received intermediate support from stone columns or pillars.

33. Openings.—Openings in the walls, whether in the form of doorways or windows, were uniformly square headed and otherwise simple in their architectural treatment. Except where the lintel was overshadowed by a cornice, the doorways had merely a slight projection from the face of the walling.

34. Mouldings.—Mouldings, or projections to relieve the flatness of the walling, were used very sparingly by the ancient Egyptians. Reference has already been made to the enriched torus mouldings worked on the arrises of the external walling, and to the curved projecting cornice, surmounted by a flat band, which emphasized the horizontal lines of the buildings, and practically these were the only mouldings used.

35. Columns and Other Forms of Support.—Columns and piers were sometimes cut from a single block of stone or granite, as in the case of the monolithic pillars of the temple of the Sphinx. But as a rule these supports were built up in irregular courses of masonry and afterwards coated with plaster to obtain a monolithic effect. The process by which the plain, square, uncarved pier was developed into the richly ornamented Egyptian column has been explained in the following way. First its four angles were cut and it became octagonal in form; a second cutting produced a sixteen-sided column the sides of which, when made slightly concave, became flutes, while a large stone slab or cap, placed on the top, gave it a more than general resemblance to the Doric column. Egyptian columns and supports may be roughly classified as follows: (*a*) the square pier, or post of stone; (*b*) the polygonal column, plain or fluted; (*c*) the bud capital column; (*d*) the lotus-flower capital column; (*e*) the bell-shaped capital column; (*f*) the Hathor-headed capital column.

Of these columns or supports those under (*a*) were often embellished with vertical lines of hieroglyphics, and columns classified under (*b*) were sometimes painted or otherwise ornamented. Those under (*c*), of which Fig. 15 (*a*) is an example, consisted of three varieties, the oldest of which, at Beni-Hassan, is composed of four plants with rounded stems bound together by a banded necking. Those of the Labyrinth, and of the processional hall of Thothmes III, consisted of eight stems each presenting a sharp edge on the outer side, the bulbous-shaped lower part of the column being ornamented with leaves. At a later period the simple round shaft variety of this column came into use.

36. The shaft of the lotus-flower capital, shown in Fig. 16 (*b*), generally either plain or decorated with inscriptions, was some-



(a)



(b)

FIG. 15



(a)



(b)



(c)

times worked to present the appearance of a group of clustered columns. In early times the shaft was curved inwards at its base, but in the Ptolemaic period the bulbous shape is seldom found. The columns surrounding the first court at the temple of Edfou rise straight from their bases, and in these and other examples the tapering sides of the shaft are finished by flat bands or neckings placed one above the other. Lotus-flower columns were usually surmounted by a square die, and adorned with rows of leaves and sprigs of lotus or papyrus placed at the springing of the capital.

37. Examples of bell-shaped capitals are shown in Fig. 16 (*a*) and (*c*) and also in Fig. 15 (*b*). It will be noticed that the motif of this capital is derived from the papyrus or palm. In some cases the capital of the lotus-flower column was inverted and the shaft reversed, its smaller end being sunk into the plinth and the larger one fitted to the widest part of the capital. Under the Ptolemies this capital bore a close resemblance to a basket of flowers and leaves ranged row above row.

Hathor-headed capitals, which date from ancient times, were used extensively in buildings of the Ptolemaic period. Fig. 17 shows a portion of the temple of Hathor, at Denderah. As seen



FIG. 17. TEMPLE OF HATHOR, DENDERAH

from Figs. 17 and 18, their shafts resembled those of the lotus-flower column and had no special characteristics of their own. The capital was divided into two square blocks, the upper one being carved on its four faces with representations of pylons, or

entrances to temples, and the lower one generally having four sculptured heads in high relief of *Hathor*, the Egyptian Goddess of Love. Square pillars, with colossi in front, known as *Osiride* pillars, represented kings in the form of the god Osiris.



FIG. 18

38. Notwithstanding the above classification, there were no definite *orders*, or systems of specified proportions, in the columnar architecture of Egypt, for neither capitals nor shafts were proportioned, as in Greek and Roman architecture, by fixed rules to govern their heights and diameters. The dimensions of the capital had no precise connection with those of the shaft, nor was the height of the latter regulated by anything but the personal taste of the architect or the constructional requirements of the building. Consequently the *intercolumniations*, or spaces between the columns, varied considerably, not only in different buildings but occasionally in rows of columns placed side by side in the same chamber or hall. Egyptian columns were very massive in their proportions; for example, those with lotus-flower capitals at the hypostyle hall at Karnak are between 11 and 12 feet in diameter.



FIG. 19

39. Ornamentation.—The earliest Egyptian temples are said to have contained neither hieroglyphic inscriptions nor sculptured images, but at the beginning of the fourth dynasty, at which period our exact knowledge of Egyptian art commences, the primitive severity of their architectural treatment had been abandoned. At later periods in the history of the country the wall surfaces, pillars, and columns of important buildings were freely enriched with sculpture and inscriptions, and still later, under the rule of the Ptolemies, decoration in every conceivable form was employed.

40. Among the natural forms on which Egyptian decorative art is based, the following were supplied by the vegetable kingdom: (*a*) the **lotus**, Fig. 19, a large water lily of great beauty, the sacred flower which kings offered to the gods; (*b*) the **papyrus**, Fig. 20, a tall smooth reed from the stalk of which the Egyptians manufactured their paper; and (*c*) the **palm**. From



FIG. 20

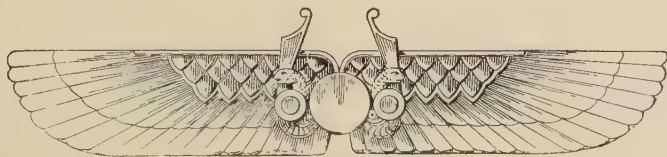


FIG. 21

the animal and bird kingdom came the beetle, the asp, birds, feathers, and winged plumage; these, and many other types

of decorative detail, were largely used during all epochs of the national art.

The well-known ornamental enrichment the **winged disc**, Fig. 21, contains a central disc, representing the sun, supported by two asps from which spring widely outstretched wings to symbolize the beneficent activity of the sun. Another equally popular ornament, the **scarabæus**, Fig. 22, consists of a winged beetle clutching a solar disc with its front feet and holding a small ball in its hind ones. The scarabæus has been identified with the rising sun and creation. Conventionalized floral ornamentation was also freely used in the manner shown in Fig. 23.



FIG. 22

41. Wall and Ceiling Decoration.—Hieroglyphics and pictorial records of historical events were used to relieve the monotonous effect of large expanses of wall surfaces. In the private tombs the daily lives and occupations of their dead owners were depicted and scenes illustrating the relations which existed between Egypt and the gods decorated the immense wall spaces of the temples. Qualified in his dual capacity of god and man, the king alone was of sufficiently high descent to act as a mediator between the deities and the people. Accordingly the Egyptian monarch is pictured in the temples as interceding with the gods, slaying the victims, pouring out the wine, and burning the incense.

Ceilings were painted blue and relieved with five-pointed yellow stars; in the Ptolemaic age zodiacs, fashioned after Greek models, appear in combination with astronomical tables of native origin.



FIG. 23

42. Whether carved or painted, ornamentation of the character shown in Fig. 23 was always conventional in its treatment, and if carved was at the earlier periods usually executed in low relief and sunk within the surface of the stone in the manner

shown in Fig. 24. But at a later period the wall surface was more deeply cut, with the result that the ornamentation stood out in high relief, as seen from Fig. 25.

Some characteristic examples of wall decoration, in which the influence of the lotus and papyrus plants and other conventionalized forms is discernible, are illustrated in Fig. 26. Wave forms are represented in the borders (a) and (b), and the lotus



FIG. 24

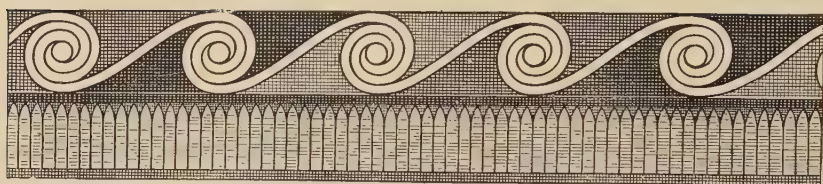


FIG. 25

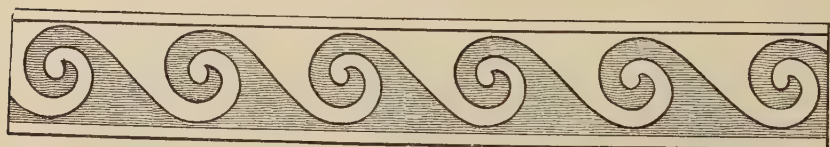
in (f) and (g) ; (c), (d), (e), and (h) represent common forms of geometrical surface decoration.

A good idea of the schemes of colour used by the Egyptians and the variety and charm obtained by the re-arrangement of practically the same elements of design can be obtained by a careful study of the coloured example of ornamentation shown in Fig. 27, in which most of the elements heretofore described have been combined, except the *rosette*, an Egyptian floral ornament, probably derived from the daisy, and illustrated in its various decorative forms in Fig. 28 (a) to (e).

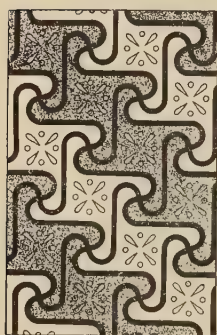
43. In contradistinction to the above examples of wall decoration, which constitute the *diaper* treatment of wall surfaces,



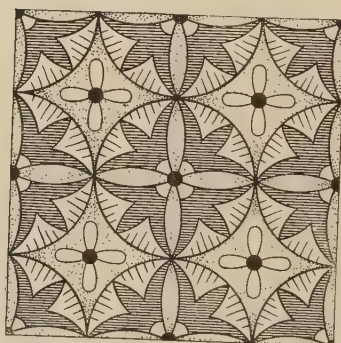
(a)



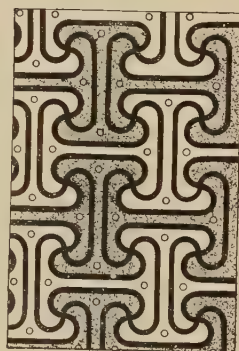
(b)



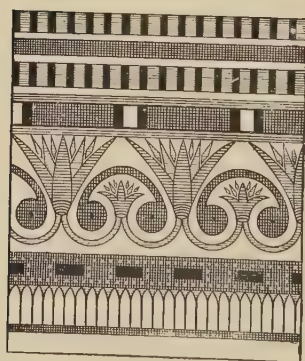
(c)



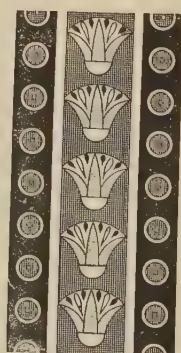
(d)



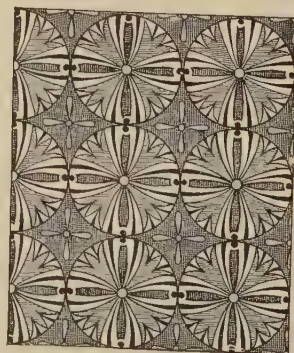
(e)



(f)



(g)



(h)

FIG. 26



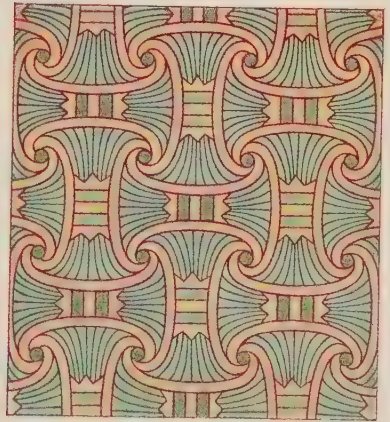
(11)



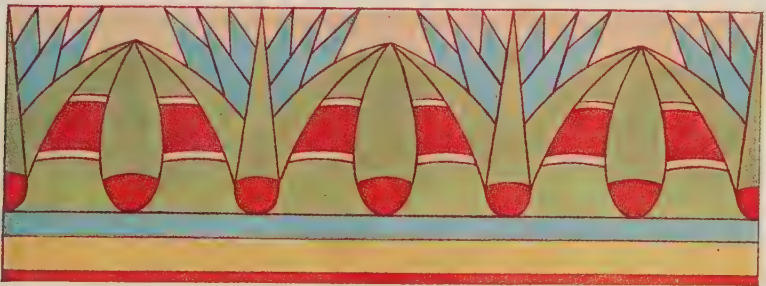
(12)



(13)



(14)



(15)

or any ornamentation made up of small geometrical subdivisions repeating in all directions, is the type of decoration known as *wall painting*. In their wall painting the Egyptians were accustomed to picture historical or religious events in a thoroughly comprehensive manner. An important religious ceremony is illustrated in Fig. 29, and the completeness with which the subject has been treated by the artist and its suitability for the purposes of mural decoration should be noted. These decorations may be considered as a combination of painting and sculpture, as the outlines of the figures were

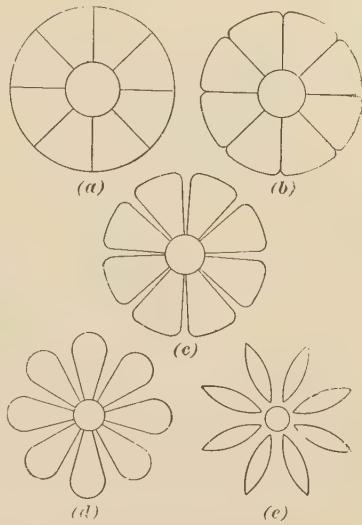


FIG. 28



FIG. 29

chiselled in the stone before the surfaces were covered with colours.

WEST ASIATIC ARCHITECTURE

BABYLONIA AND ASSYRIA

GEOGRAPHICAL, HISTORICAL, AND SOCIOLOGICAL

44. Geographical.—Between the rivers Tigris and Euphrates, Fig. 30, there is a long valley, for many centuries a scene of desolation and waste, that separates the deserts of Northern Arabia from the Median mountains on the western boundary of Persia. Yet the ancient cities of this now deserted and lonely country were once thronged with settlers from all parts of the earth who flocked to Mesopotamia, or the country between the rivers, as the most important centre of power and wealth in the civilized world.

45. Geological.—The southern portion of the land enclosed by the twin rivers, the Tigris and the Euphrates, has been formed by an accumulation of silt brought by these rivers in their course from the Armenian highlands to the Persian Gulf. The nature of this deposit is such that, when properly irrigated by a system of canals, the whole valley of the rivers becomes an exceedingly fertile plain.

46. Historical.—The *Akkads*, the earliest civilized occupiers of Mesopotamia, belonged to the yellow, or Mongolian, race of mankind and had therefore no family relationship with the Assyrian and other Semitic nations which adopted Akkadean or Chaldean civilization and assisted in the formation and consolidation of the great Babylonian empire.

An inventive and art-loving people, the ancient Chaldeans did much for civilization. They built cities, originated the art of *cuneiform writing* by means of wedge-shaped letters, instituted a system of religion, and encouraged the development of science



FIG. 30

and art. Little is known of the early Babylonian kings who established themselves in the lower portion of the valley of the great rivers. But during the second dynasty (1936 to 1568 B.C.) the country of the Upper Tigris, known as Assyria, was colonized by settlers from Babylon who carried the learning, art, and manners and customs of the ancient city into their new country. From a state of dependency Assyria grew into a powerful kingdom of which Asshur, on the Tigris, was the first capital, the seat of government being afterwards transferred to Nineveh.

47. In the fourteenth century B.C. the Assyrians rose against Babylonia, established a new Semitic dynasty in the ancient capital, and became henceforth the dominant power in the country of the two rivers. The subsequent history of these nations, for several centuries, becomes a record of Assyrian conquests and Babylonian rebellions. Eventually the Babylonians entered into an alliance with Media, then the most powerful kingdom of the Iranian table-land, and in 625 B.C. the allied forces overcame the Assyrian king and re-established the Babylonian monarchy.

Nabopolassar, the founder of the tenth Babylonian dynasty, known as *the Empire*, had assisted Cyaxares of Media in conquering Assyria and, as a reward, obtained the sovereignty of the western Assyrian provinces, the valley of the Euphrates, Syria, Phœnicia, and Palestine. During the reign of his son and successor, Nebuchadnezzar, the great Babylonian empire reached the summit of its power and magnificence; but in 555 B.C., on the accession of Nabunahid, the sixth monarch of the dynasty, the Babylonians were attacked by Cyrus the Great of Persia, who defeated and captured their king. The Persians then laid siege to Babylon, the defence of which was entrusted to Belshazzar, the son of the captive Nabunahid, and on the fall of the capital and the death of Belshazzar, in 538 B.C., the once mighty empire was degraded to a Persian province. Thus reduced, the great city of Babylon soon fell into a state of decay and, like her rival Nineveh, which had been destroyed about 608 B.C., left nothing but mounds of rubbish to mark the extent of her former greatness.

48. Some two hundred years after the destruction of Nineveh, when the Persians were supreme in Asia, a native prince, Cyrus, rebelled against his elder brother Artaxerxes and endeavoured to seize the crown. To accomplish his ends, Cyrus raised an army which included 13,000 Greek troops. But the enterprise ended in disaster, as the insurgents were defeated by the royal troops near Babylon, and the Greeks, now reduced to some 10,000 men, commenced that marvellous retreat to the Euxine known to historians as the Retreat of the Ten Thousand.

Xenophon, the scholarly Greek soldier, has left a brilliantly written account of this adventurous undertaking, in which he relates how one day, after a forced march and an engagement with the pursuing Persians, he and his small army came to the banks of the Tigris, where they found the remains of a vast deserted city, called Larissa, the walls of which were nearly 7 miles in circuit and 100 feet in height. And within another day's march of the first they came upon a second great deserted city, which he called Mespila. These two curious groups of ruins were all that remained of the once immense Assyrian cities, Kaleh and Nineveh, the very names of which had been forgotten within 200 years of their fall.

49. For many centuries after Xenophon made his wondrous march through a hostile country the long, low mounds of earth, representing ancient walls and fortifications, and the lofty ones which shrouded palaces and temples, were suffered to keep their secrets unrevealed. But, at the commencement of the nineteenth century, the ruins of Babylon were opened out for the first time, and later those of Nineveh and other Assyrian cities, with the result that the world is now in the possession of a vast fund of absolutely reliable information relative to the arts, literature, laws, religions, manners, and customs of one of the earliest and most advanced of extinct civilizations

50. The ruins of Babylonia extend over an immense area near Hillah, on the eastern bank of the Euphrates, where three long mounds of earth mark the sites of important buildings. That on the north is thought to contain the remains of the ancient tower of Belus, which was rebuilt by Nebuchadnezzar, while the

one on the south has been identified with that monarch's palace. The third and most ancient of the three mounds, that of Amran, marks the position of a former palace of equal antiquity with Babylon itself. On the other bank of the Euphrates is the mound of Birs-Nimrud, identified with the temple of the Seven Spheres at Borsippa, which was another of Nebuchadnezzar's reconstructions.

The mounds of Koyunjik and Nebbi-Yunus, which mark the traditional site of Nineveh, are the most extensive in Assyria. Sennacherib's palace at Koyunjik has a wonderful series of halls and chambers lined with sculptured slabs of alabaster. Other ruins include those of the palaces of Khorsabad and Nimrud. The walls of these disinterred palaces, with their almost inexhaustible rows of inscriptions recording the lives and the reigns of the regal builders, form valuable pages in the histories of Babylonia and Assyria.

But even these wonderfully preserved evidences of an early and long-forgotten civilization are not to be compared in importance with the marvellous collection of national records and private documents, and of scientific, educational, and religious works which have been unearthed at the palace of Asshurbanipal, in the great mound of Koyunjik.

51. In that once sumptuous Assyrian palace two comparatively small chambers were discovered which had been specially constructed, arranged, and fitted, one as a library and the other as a depository for state documents and royal decrees of immense antiquity. The books and records, which numbered about 10,000, consisted of tablets of baked clay covered with the strange cuneiform writings of the ancient Akkad people. These invaluable records of the past have been duly deciphered and classified. Of the subjects on which they treat, religion, mathematics, science, and astronomy predominate. Naturally enough, history is but scantily represented, as the annals of each reign of Babylonian and Assyrian kings were inscribed on the wall tablets set up in the royal palaces. On the other hand, there are many treatises on geography, plants, and animals, and numerous grammars and dictionaries. The state and private documents include royal

decrees, reports from generals or governors, deeds of sale and mortgage contracts of all kinds, and records of money lent.

52. Religion.—The religion of the two countries was almost identical in outward form, but that of Babylon was more decidedly polytheistic in its nature. Asshur, the national deity of Assyria, was supreme in that country and was never superseded by the lesser gods of the sun, moon, and stars. But at Babylon, in addition to *Il* or *Ra*, local deities, such as *Bel-Merodach* and *Nebo*, were worshipped and religion was also bound up with astrology. Both governments were despotic, the kings being regarded as the religious as well as the secular heads of the communities.

53. Industries.—Skilful in handicrafts and science, the Mesopotamians carried the manufacture of carpets to a state of perfection, and the embroideries of Babylon were well known and prized in other countries. Chairs and tables were well designed and well made, and some of the natural forms with which they were ornamented, such as lion's claws, are still used. Equally proficient in working hard or soft materials, the Mesopotamians produced beautifully engraved seals of all kinds of polished stone, and their bas-reliefs were sculptured in gypsum or basalt. They understood the arts of glassmaking and enamelling, and were skilled in the manufacture of terra-cotta and porcelain. The embroideries of the Babylonians and Assyrians, the gilded and carved ivories, the metal work, and the jewellery all show that most of the useful arts were cultivated so as to attain a high degree of perfection.

CHARACTERISTICS OF WEST ASIATIC ARCHITECTURE

BABYLONIAN AND ASSYRIAN

54. Babylonian.—It is almost impossible to discriminate, with any degree of accuracy, between the architecture of Babylonia and Assyria, as each, in turn, dominated the country watered by the Tigris and Euphrates. There is, however, little doubt that

the Babylonians developed the art of the original settlers in Chaldea, and that, at a later date, the Assyrians copied Babylonian methods of building.

Owing to the marshy soil of the country, and to the frequent inundations to which it was exposed, Babylonian buildings were raised on the flat surfaces of artificial mounds of enormous area and often from 30 to 60 feet in height. Little or no stone was obtainable, but clay was to be found throughout the whole alluvial plain of Babylonia. So the art of making sun-dried bricks, with which to construct their houses and other buildings, was soon acquired by the ancient Chaldeans. With advancing civilization came increasing skill in the manufacture of bricks which, during the later period of Babylonian art, were burnt in kilns and possessed the hardness and solidity of stone. Red clay, or loam, mixed with chopped straw, was used for mortar in the early buildings, but later bitumen brought from Hit, on the Euphrates, was employed with excellent results.

Apart from their towers, in which vertical masses of brickwork were piled, stage upon stage, to an enormous height, the Babylonians were accustomed to extend the walls of their buildings in long, low, and generally unbroken surfaces divided by slightly projecting pilasters into a series of recessed panels. These structures seem to have been finished with flat timber roofs covered with layers of earth, and when the walls of a building could not safely be spanned with single beams of timber, wood posts, or columns, were used as intermediate supports.

55. Assyrian.—Stone was very plentiful in Assyria, yet the brick architecture of Babylonia was repeated with scarcely any variety or improvement, and there is other evidence of the lack of creative art among the Assyrians. For example, their country contained many rocky eminences upon which temples and palaces could be raised ; yet, in imitation of the system of building they had learned from Chaldea, the Assyrians continued to construct artificial platforms or substructures for their important buildings.

The brick ornamentation of the Babylonians was sometimes copied in stone by the Assyrians, and the latter material was also occasionally used to face the walls and platforms of royal palaces.

The principle of arch construction was well known and understood, but it was applied only to narrow vaults and gateways and never used on an extensive scale. Representations of domes and stone columns with bases, capitals, and entablatures are depicted on Assyrian bas-reliefs, but no actual remains of these features of advanced architecture have been found.

EXAMPLES OF WEST ASIATIC ARCHITECTURE

TEMPLES AND PALACES

56. Temples.—Chaldean temples, known as *ziggurats* or mountain peaks, presented the appearance of a series of square stages, built one over the other, each of which was somewhat smaller than the one beneath it. External staircases led to the temple proper, or sanctuary, placed on the top stage of the tower.

The stages of the temple of the Seven Spheres at Borsippa, rebuilt by Nebuchadnezzar the Great, differed in colour and each represented, symbolically, one of the stars in the astrological combination, known as *the seven stars of heaven*. This interesting tower temple, 156 feet in height, was surrounded by a walled enclosure. An inscription, set up by Nebuchadnezzar, describes how the older building had fallen into decay because drains for drawing off the water had not been provided and so rain and tempest had washed away the bricks.

57. Palaces.—Several ruins of buildings believed to be palaces of the Assyrian period have been excavated, one of which, known as the palace of Khorsabad, has been thoroughly explored, measured, and conjecturally restored. This palatial building was raised upon a huge platform of sun-dried bricks protected by a retaining wall of coursed masonry nearly 10 feet in thickness. It was approached by wide flights of steps constructed of black basalt and immense human-headed bulls and colossi flanked its principal entrances. Thirty-one courts, the largest of which is 315 feet by 200 feet, and 198 chambers have been discovered in addition to the remains of an observatory and a temple. The

walls of the palace, which were constructed of sun-dried bricks, varied in thickness from 5 to 15 feet. There is great difference of opinion as to the manner in which the long narrow halls were lighted. At Khorsabad these halls vary in size, the largest being 116 feet by 33 feet, the smallest 87 feet by 25 feet, and many suggestions with regard to their method of lighting have been made. The theory that light was either admitted through lateral openings in a vaulted roof, or that the side walls of the halls supported a double row of columns arranged as a clerestory under a flat roof, is supported by the abnormal thickness of the walling of some of the palaces. For instance, the walls of the hall at Konyunjik were 15 feet and those of Nimrud, the ancient capital, 26 feet thick.

Semicolumns decorated the walls of the palaces at Khorsabad and Nimrud, but, although fragments of mouldings have been found at the former building, no traces of either capitals or bases have been seen. On the other hand, in the sculptures, which lined the walls to a height of 9 or 10 feet, columns and pilasters with caps, bases, and entablatures are clearly shown. One bas-relief depicts a column carried on the back of a bull, another the front of a palace lighted by windows placed between Ionic columns.

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

58. Plans.—The plans of Babylonian and Assyrian buildings were rectangular in form and, although no remains of the actual structures have been discovered, picture slabs from Konyunjik depict domes of varied form rising from a square base. In the palaces, long narrow halls and small rooms were grouped round spacious internal courtyards of which there were, usually, a large number. The lofty terraces on which the Babylonians and Assyrians piled their buildings, have already been described.

59. Walls.—The walls of the palaces were of enormous thickness, but the material of which they were mainly constructed, namely, crudely burnt bricks, was conducive to their rapid decay.

Coloured bas-reliefs of terra-cotta were used for wall decorations until this form of ornamentation was superseded by alabaster slabs at the time when inscription tablets and sculptured pictures began to be used to line the walls of the royal palaces. In some instances long rows of kings are depicted, in others lines of winged figures carrying religious emblems; and much of our knowledge of the manners and customs, art and religion, of Babylonian and Assyrian



FIG. 31



FIG. 32



FIG. 33

civilization is due to the bas-reliefs and inscriptions found in the ruined structures of upper and lower Mesopotamia.

60. Roofs.—It is uncertain whether, as some authorities assert, sloping roofs were used. But the roof in ordinary use was flat in form and constructed of horizontal beams covered with thick layers of earth. Small roofing surfaces were sometimes covered with brick arching or vaulting.

61. Openings.—The unusually high doorways were generally finished with arched heads, but the lintel, or trabeated finish, was also used. No remains of windows have been found.

62. Mouldings.—Only a few mouldings of the simplest kind have been discovered, although, as already pointed out, sculptured tablets reveal the fact that the principles of the architrave, frieze, and cornice were known.

63. Ornamentation.—Owing to the dearth of stone the Babylonians were accustomed to employ terra-cotta reliefs and ornamentation for the decoration of the walls of their buildings. As



FIG. 34

an example, the wall to be decorated would be first covered with a coating of soft clay of sufficient thickness to receive the pointed ends of small terra-cotta cones the thick, flat ends of which, painted red or enamelled black or white, were then arranged in set patterns of bewildering variety of designs. Well-designed alabaster pavements, covered with delicate carvings and coloured friezes in enamelled tiles, have been found in profusion among

the ruins of the Assyrian palaces, the principal courts and state apartments of which were lined, to a height of from 9 to 12 feet, with carved alabaster slabs. Figs. 31 and 32 show two of these slabs, the first representing a king killing a lion, and the latter Izdubar holding a lion. The upper part of the walls was plastered and decorated with frescoes and mosaics.

Decorative motives were supplied by the symbolic form, known as the winged and human-headed bull, Fig. 33, which stood in pairs at the palace doorways, and by the sacred tree, Fig. 34. The reproduction from a bas-relief, shown in Fig. 35, represents the god Nisrock. Nature and various forms of human life were admirably reproduced by Assyrian sculptors, but conventionalized ornamentation, as in Fig. 36, was also largely used.



FIG. 35

64. On the whole, Chaldean art had little in common with

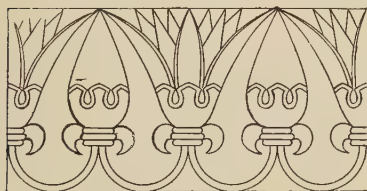


FIG. 36

that of Egypt despite a general resemblance in its mouldings and conventional ornamentation. But the perishable nature of the building materials used by the Babylonians and Assyrians necessarily rendered their art far less monumental

and impressive than that exemplified in the huge durable structures erected on the banks of the Nile. Brutal strength seems to have been more important than graceful proportions, but the details of every part were finely wrought.

PERSIAN ARCHITECTURE

NOTES ON PERSIA

GEOGRAPHICAL, HISTORICAL, AND SOCIOLOGICAL

65. **Geographical.**—The great table-land of Asia, which extends from the valley of the Indus on the east to that of the Tigris on the west, contains, in its western division, the plateau of Iran, the ancient home of the Persians, shown on the map, Fig. 37. Originally scattered over this large district, the Iranians appear to have settled finally in the mountains which border the valley of the Tigris and Euphrates. Here they formed two separate kingdoms, known as Media and Persia, the former of which occupied the north-west portion of the table-land.

Persia, the land of the ultimately dominant people, was originally the name given to the province of Farsistan, or Fars, whence the name Parsees, or Fire Worshippers, which is now used to designate the people of the whole nation. It is customary to divide the province of Fars, or Persia proper, into two parts, known respectively as the *warm* and *cold districts*.

66. **Geological.**—The warm district consists of a tract of flat land, from 10 to 50 miles in width, which extends between the mountains and the sea. Its soil, alternately sand and clay, is poor, and, in addition, the country is not well watered. But the greater part of Persia proper is comprised in the cold district, and consists of mountains, plains, and narrow valleys which are curiously intermingled.

67. **Religion.**—The Persian religion was superior to that of either Egypt or Babylonia, and the sacred books, the *Zend-Avesta*, or comments on the law by Zoroaster, are said to date back a thousand years before Christ. It is claimed that these

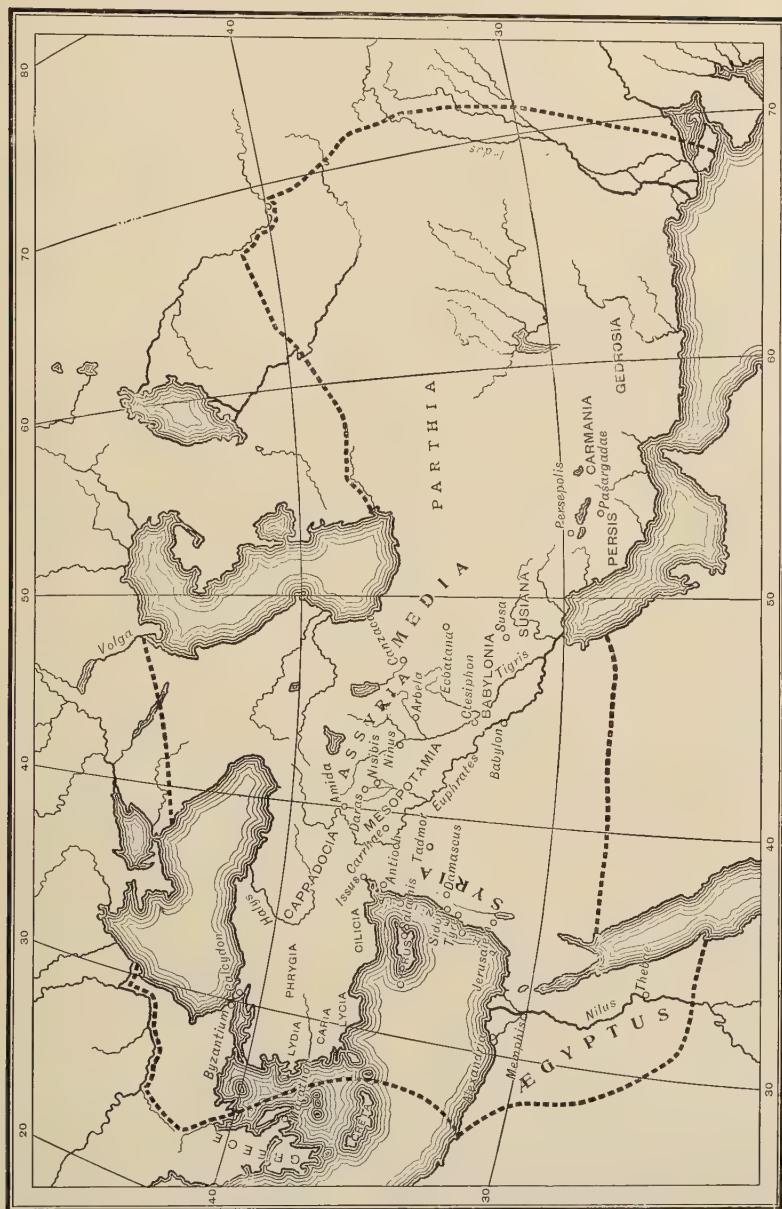


Fig. 37

writings revealed universal knowledge to Zoroaster for the benefit of mankind. They depict *Ormuzd*, the good spirit, the supreme God of Light, as having the sun and fire for his symbols. To Ormuzd is opposed *Ahriman*, the evil spirit, the ruler over the kingdom of darkness. and each spirit has followers known as good and evil angels. The sun, fire, air, and water are the agents of the good spirit ; night, cold, and the desert whirlwinds those of the evil one.

68. Historical.—About the middle of the seventh century B.C. the Medes became prominent in Western Asia and, under Cyaxares, commenced the conquest of Assyria. Aided by the Babylonians, they defeated the Assyrians, took Nineveh, and established the Median empire, which, however, was subsequently overthrown by the Persians under Cyrus the Great.

The Medes and Persians, who were of the same race, language, mode of life, and practically of the same religion, then formed a single nation in which the Medes had a fair share of importance and honour. Amazing success followed this unification of the two Iranian kingdoms, and the vast empire of Cyrus soon extended over the whole table-land of Asia, the valley of the Tigris and the Euphrates, Palestine, Phœnicia, and Asia Minor.

The dynasty founded by Cyrus lasted for 228 years, during which a keen contest arose between Greece and Persia for supremacy. This long-drawn-out struggle was finally terminated by the victories of Alexander the Great in 330 B.C., when Macedon, which had absorbed Greece, became for a brief period the mistress of the world.

CHARACTERISTICS OF PERSIAN ARCHITECTURE

PRINCIPAL FEATURES

69. Symmetry.—Persian architecture was characterized by regularity and symmetry. Although its details bore no resemblance either to Greek form or to Greek ornamentation, yet, as the majority of the Persian buildings were planned in a manner to enable door to correspond with door, window with window,

column with column, and even room with room, something akin to Greek feeling for geometrical precision was clearly expressed.

70. Dignity.—The two main features of Persian palaces are found in the huge sculptured staircases by which they were approached from without, and the great pillared halls which they contained within. By following the custom of the Babylonians and placing buildings on lofty substructures, or platforms, the Persians were enabled to endow their royal residences with an aspect that was at once dignified, monumental, and regal.

During the period of the Median ascendancy, the colonnades and porticoes of the palaces were constructed with pillars or columns of wood. But when the Persians became predominant in Asia they substituted stone columns for the cedar pillars of their predecessors. Although these stone columns were singularly small in diameter, compared with their height, yet they were so skilfully and solidly fixed that some have resisted the destructive action of time for over 2,000 years.

71. Independence of Other Styles.—The Persians found stately buildings in Mesopotamia, in which the structural column played an unimportant part, and in which the materials used were not of the best and most durable nature. In Egypt they found gigantic structural columns, and building materials of the most lasting nature. But while distinct traces of the influences of both Egyptian and Babylonian art are apparent in Persia, nothing in the nature of servile imitation is to be seen. On the contrary, there is no doubt that the Persians succeeded in evolving a phase of art which was, in many respects, singularly unlike that of any other nation.

EXAMPLES OF ARCHITECTURE

PALACES AND TOMBS

72. Palaces.—Most of the remains of Persian buildings are columnar in construction, but practically no walls, doorways, or roofs have been found, nor is there any contemporary written

description to guide one as to their exact appearance, or as to the manner in which they were built.

Ecbatana, the capital of Media, was noted for the magnificence of its palace, which was built by Cyaxares and enlarged and otherwise improved by Persian monarchs. This palace is supposed to have resembled those erected at a later date at Susa and Persepolis. But there was one important structural difference between the earlier and the later buildings. Thus at Ecbatana, the pillars and columns of the colonnades were of wood; at Susa and Persepolis they were of marble or stone.

The remains of the palaces of Persepolis occupy an elevated platform, built in terraces formed of solid masses of hewn stone, and ranging in height from 20 feet and upwards above the level of the neighbouring plains. Some of the staircases, that led from the plain to the various terraces, were so gradual and easy as to admit of horses going up and down them, and one had a width of 22 feet. Of the five large buildings which stood on the platform, four were on the central, or upper, terrace, and comprised the palaces of Darius, Xerxes, and Artaxerxes, and a large pillared hall.

73. The palace of Darius was about 135 feet in length and 100 feet in breadth. Its southern front was approached by a double staircase, the walls, spandrels, and balustrades of which were embellished with colossal figures sculptured in low relief. Guard rooms flanked the sides of the central portico; behind was the main hall, a square chamber the sides of which were 50 feet in length. The roof of this hall was supported by sixteen columns, arranged in rows of four, which lined with those of the portico. Although the bases remain, the columns have disappeared, and it is impossible to say whether the latter were of wood or stone. At the back and sides of the hall were rooms of varying size, the largest of which was about 40 feet by 23 feet. Externally, in general appearance, this building must have closely resembled a small Greek temple.

Although planned on a far larger scale, the palace of Xerxes was very similar to that of Darius, but the palace of Artaxerxes is in too ruinous a condition to be even conjecturally restored.

In addition to the palaces proper, the platform contained numerous subsidiary buildings, such as huge gateways guarded by colossal bulls, and immense pillared halls and other rooms embellished with sculptured reliefs.

74. Tombs.—Of the royal tombs, that of Cyrus, at Pasargadæ, is the oldest and most remarkable. It had the appearance of a small Greek pedimented temple and crowned the summit of a series of stepped platforms of varying heights. The end wall of the tomb was pierced by a low narrow doorway which led into a small chamber, about 11 feet long, 7 feet broad, and 7 feet high, in which the body of the great king lay in a golden coffin. From the remains of a column still to be seen, it is surmised that the tomb was originally enclosed in a rectangular area and surrounded by a colonnade. The whole composition shows distinct traces of Greek influence, and the mouldings of the temple-shaped tomb are clearly of Grecian origin.

The other royal sepulchres of the Persian monarchs, consisting of rock tombs, excavated at a considerable height in the sides of mountains, bear a general resemblance to the burial places of the later Egyptian kings, but the architectural treatment of the façades is wholly characteristic of Persian art.

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

75. Plans.—The Persian buildings, mostly rectangular in outline, were set out with careful regard to symmetry and regularity. Ranges of columns were usually similar in thickness and height, and equally spaced.

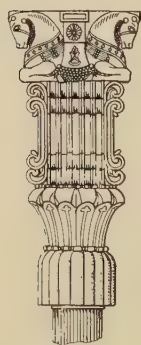
76. Walls.—The walls, sometimes of immense thickness, were often constructed of solid stone blocks united by metal cramps, and well-burnt bricks were also commonly used. True verticality was kept in the walling, and the inward inclination, or *batter*, which appears in the walls of Egyptian buildings, does not seem to have been copied by the Persians.

77. Roofs.—The majority of the roofs appear to have been of timber construction, but the evidences hitherto obtainable is not conclusive, and stone-slab roofing was, at least, occasionally used ; for example, the marble tower, 24 feet square and 36 feet high, at Nakhsh-i-Rustan is covered with four large slabs of stone, carefully fitted and cramped together in the form of a very flat pyramidal roof.

78. Openings.—The doors and windows probably resembled those found in Egyptian buildings ; the square-headed openings were finished with plain architraves and hollowed and enriched cornice mouldings. Doorways were usually narrow in proportion to their height.

79. Mouldings.—The mouldings were of a simple character, those generally used being the large roll and the *cavetto*, or hollow.

80. Columns.—Persian columnar architecture is absolutely unlike any known examples of Egyptian or Assyrian art, and the fantastic treatment of marble and other stone columns suggests that their designs were evolved from earlier examples in wood. Some of the grey marble columns found at Persepolis are over



(b)



(a)

FIG. 38

60 feet in height and measure 6 feet in diameter. Persian capitals, which comprise three or four varieties, may be classified as follows: (a) Representations of two half bulls, or griffins, the heads of which are turned in different directions, of which an example is shown in Fig. 38 (a) ; (b) capitals made up of four or more voluted heads, arranged vertically instead of horizontally and made to face four ways, as seen in

Fig. 38 (b) ; and (c) composite capitals formed of three distinct members, including lotus buds with hanging leaves, vertical volutes, and half bulls, or griffins, Fig. 38 (b).

81. Ornamentation.—There are no remains of the wall decorations, furniture, or domestic implements of the Persians, and the nearest approach to statuary is exemplified in the colossal bulls, sculptured in high relief, which were set up at the portals and porticoes. Of these figures there were two varieties, one representing a real animal, and the other a human-headed monster with the wings of an eagle and the body and legs of a bull. Other Persian reliefs consisted of representations of the king engaged in combat with a lion or bull, and of processions of guards, courtiers, or tribute bearers. The decorations often show Egyptian influence, as seen in the use of the lotus capital, and in the pendant lotus leaves on the bases of some of the columns.

GREEK ARCHITECTURE

NOTES ON GREECE

GEOGRAPHICAL, HISTORICAL, AND SOCIOLOGICAL

82. Geographical.—Greece, or Hellas, which occupies the southern portion of the Balkan Peninsula, Fig. 39, is a small country, its greatest length being only 250 miles and its greatest breadth 180 miles; but in the complexity and variety of its natural features, Greece is distinguished from any other European land. No part of the kingdom is a great distance from the sea, or more than 10 miles from the hills, and its unusual maritime advantages are due to the bays and islands, gulfs and inlets, that line its shores and provide a good supply of natural harbours. Divided by its mountains into a number of independent parts, between which plains of arable land maintained tribes of comparatively isolated people, nature was largely instrumental in developing that spirit of local patriotism and political independence which so strongly characterized ancient Greek communities.

83. Geological.—Some of the Grecian mountains, for instance many of those in Peloponnesus, are composed of primitive rocks,



FIG. 39

such as granite, serpentine, and porphyry, but the greater part of the hilly country consists of secondary formations of grey limestone. Marble is very plentiful, more especially the white variety of Pentelicus, the blue of Hymettus, and the green and red of Peloponnesus.

84. Climate.—The peculiarity of the climate of Greece, which varies from intense heat in the summer months to the extremity of cold in the winter, is said to be due to the exposure of the country to the cold winds arising from the hills in the north of Greece and to the exhausting sirocco brought from the deserts of Africa on the south.

85. Religion.—Originally the gods of the Greeks were regarded as personifications of the powers of nature over which they were supreme. It was thought that all good and evil came from the gods who, although superhuman and possessing immortality, were like mortals in form. The Greek deities were supposed to be interested in everything that passed on earth and to be subject to mortal failings, but there was no representative of evil among them. Traditional mythology produced a long list of gods and goddesses over whom Zeus reigned supreme from a high mountain in Thessaly, known as Olympus.

86. Historical.—Some comparatively recent excavations at Mycenæ and Tiryns have revealed traces of Greek civilization dating from about the year 1000 B.C., which is also the traditional date assigned to the writings of Homer.

It is therefore tolerably certain that the islands and coasts of European Greece were held by the founders of the present nation at least as early as 1300 B.C., and that the Greek colonization of western Asia Minor soon followed.

At that period Greece was divided into a number of tribal kingdoms of which two ultimately became prominent, namely, that of the Dorians in central Greece and that of the Achæans in the Peloponnesus. Finally the Dorians conquered their rivals, reduced to subjection all the more desirable portions of the country, and founded nine states, of which the principal were Argos, Lacedæmonia, and Messenia. About the year 800 B.C. the Dorian conquerors were at war with each other and, as the

result of victories over Argos and Messenia, the Lacedæmonians dominated about two-thirds of the Peloponnesus.

87. Meanwhile the province of Attica became prominent in central Greece, and a purely democratic constitution was established at Athens in 520 B.C. Great military and naval successes followed; Chalcis was taken and occupied, and ships were sent to assist the Greeks of Asia Minor who had revolted from Persia. Soon it became apparent that the pretensions of the Persian kings to universal rule rendered a struggle between Greece and Persia inevitable. The first Persian invasion of Greece, which was frustrated by the elements and rendered abortive, took place in 492 B.C. Two years later a second attempt to subdue Greece was made by the Persian king, but his huge army was completely defeated by 10,000 Athenians and 1,000 Plataeans at Marathon.

The third and last Persian invasion, that of Xerxes, took place in 480 B.C., when Attica was occupied and Athens burnt; but a few Greeks checked the advance of the Persian king's army at Thermopylæ, and defeated and almost completely destroyed his fleet at Salamis. Ultimately Athens was left in undisturbed possession of the Greek cities on the coast of Asia Minor.

88.. Athens then organized a great confederacy to which the islands of the Ægean, with the exception of Melos and Thera, many of the maritime cities of Europe, and all the Greek cities of Asia became subject. The power and wealth of Athens increased to an enormous extent, and her golden age of art and literature commenced under the great statesman, orator, and patron of art, Pericles. Learned and artistic men of all kinds were attracted to Athens; the Propylæa and the Parthenon were built, Æschylus and Sophocles wrote their plays, and Phidias produced his masterpieces of the sculptor's art. Dissensions and jealousies between the various states brought about the long-drawn-out Peloponnesian war in 431 B.C., the result of which was that Sparta, having wrested supreme power from Athens, was in turn subjugated by Thebes. These fierce struggles exhausted the country and paved the way for the destruction of Greece by the Macedonians in 338 B.C., under their warlike king Philip and his greater son Alexander.

89. The intellectual and commercial development of Greece was assisted by the Persian invasions, which broke down the barriers of interstate isolation, thus uniting the various states, and stimulating a patriotic spirit among the independent communities into which the people were divided. With the end of the Persian wars came free communication and commercial relations with all parts of the Great King's empire. Greek merchants joined in the caravan trade of central Asia or bought and sold goods on the shores of the Indian ocean. Greek philosophers and other learned men visited centres of older civilizations, such as Egypt, and on their return home wrote interesting accounts of what they had seen and heard. The ardour of the Greeks for exploration and foreign travel, combined with a constant love for their native land, enabled them by means of the free intercourse between the mother country and her colonies to bring their civilization to all parts of the Mediterranean. The colonies saved Greece from over-population and increased her power, sphere of influence, and wealth, and brought the mother country into contact with Oriental civilization.

Wherever the Greeks settled, thither they carried their social life and customs. The municipal aristocracies resided in the towns, or in their neighbouring country houses and farms, living chiefly out of doors and cultivating their bodies by exercise in the gymnasium, and their minds by conversation in the market place, which was regarded as a kind of club; for it was at the market place that the business of the day was transacted. There the philosopher instructed his pupils, or the poet recited his latest ode, and there the Greek citizens, assembled to witness the ceremonious unveiling of a new work of art, either expressed their approval by loud cheers or their discontent by murmurs.

CHARACTERISTICS OF GREEK ARCHITECTURE

PRINCIPAL FEATURES

90. *Greek Orders in General.*—Patriotic fervour, aroused by the Persian wars, led to the general expansion of Greek culture in which Athens occupied a prominent position, its architecture

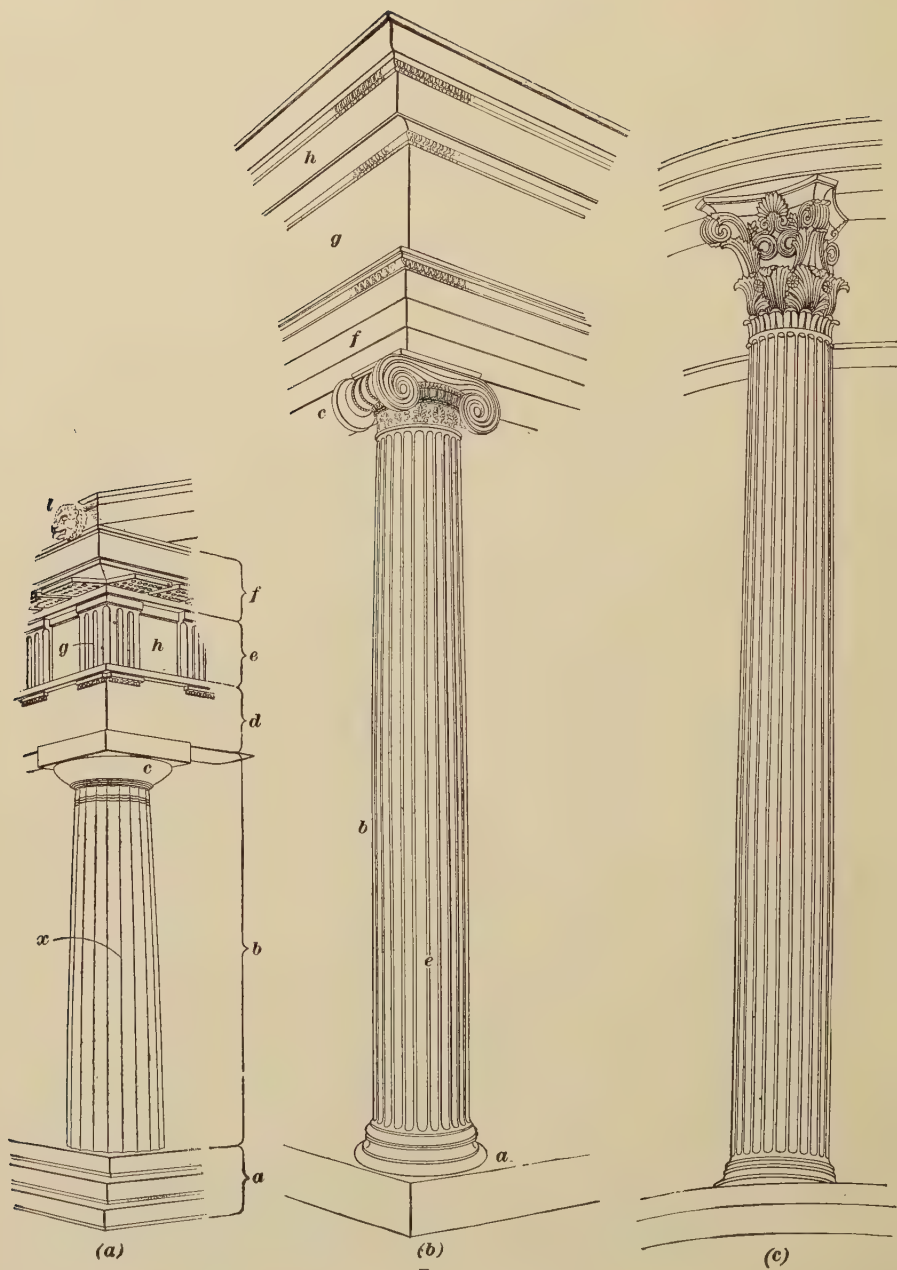


FIG. 40

and sculpture playing important parts. During this period artistic masterpieces were produced which, even in their now ruinous condition, still excite the admiration of the civilized world. These fine examples of Greek art were constructed according to three orders, or styles, of columnar architecture, known as the *Doric*, the *Ionic*, and the *Corinthian*.

91. In Fig. 40 (*a*) is shown the Doric order, in (*b*) the Ionic, and in (*c*) the Corinthian. Of the Greek orders the Doric, the most ancient, suggests strength and massiveness rather than grace, the latter being the distinctive feature of the simple and well-proportioned Ionic, while the principal charm of the profusely adorned Corinthian, is found in its beautifully designed, foliated capital.

The combination of columnar parts, called an **order**, consists of three principal members, or parts, which are known as (*a*) the *stylobate*, or base; (*b*) the *column*; and (*c*) the *entablature*. In Fig. 40 (*a*) the vertical brackets to the right of the illustration indicate the positions of these parts, the bracket *a* showing the stylobate, *b* the column, and *d*, *e*, *f* the principal parts of the entablature of which *d* is the *architrave*, *e* the *frieze*, and *f* the *cornice*.

92. As seen from Fig. 40 (*a*), the Doric column consists of the cylindrical portion, known as the *shaft*, and the capital *c*, built up of a projecting moulding, the *echinus*, and a square block, known as the *abacus*. The column of the Doric order has no base; its height, including the capital, varies from four to six diameters. The shaft diminishes in diameter toward the top, the vertical outline, instead of being straight, forming a slightly curved line, called an *entasis*. The frieze is ornamented with flat members *g*, known as *triglyphs*, the intervening spaces *h* between them being termed *metopes*. At *x* are shown the vertical channels, or *flutes*, of the shaft, generally twenty in number. The illustrations of the Greek orders in Fig. 40, which show all three columns with the same thickness of base, indicate in each case the relative proportion of the diameter of the column to its height, thus making it possible to compare the proportions of the three orders, one with the other.

93. The Greek Ionic order, Fig. 40 (*b*), is a little more than nine diameters in height when the base *a*, shaft *b*, and capital *c* only are considered. Its shaft is fluted with twenty-four flutes and alternating fillets *e*, which follow the entasis. The base is moulded and the capital is ornamented with four spiral projections, called *volutes*. The entablature is divided into three parts, *f* being the architrave, *g* the frieze, and *h* the cornice; they are proportioned by dividing the height of the entablature into five parts, four of which may be equally divided between the architrave and frieze, and the fifth given to the cornice.

The Greek Corinthian order, Fig. 40 (*c*), is ten diameters in height, the capital being about one and one-third diameters high. Its entablature comprises the main divisions of architrave, frieze, and cornice. The bell-shaped capital is surrounded by two rows of acanthus leaves, from the upper stage of which small volutes spring from twisted tendrils, scrolls, or husks.

94. **Cities.**—When Greek civilization fully set in, the mountain heights, formerly occupied by the palaces of wealthy rulers, were no longer used for the dwellings of men, but reserved for the temples of the local deities. Thus, with the growth of civic security, cities spread downwards and the *agora*, or market place, and town were built at the foot of the hill, the summit of which became the centre of the religious cult. Wherever possible, small harbour towns were formed on the coast near the mother city; thus Athens had *Piræus*, Corinth *Lechæum*, and Argos *Nauplia*. In many cases long walls were built, from city to harbour, to prevent an enemy from isolating one from the other.

95. Athens, as the most important of the ancient cities, may be taken as an example of Greek civic planning at its best. The *Acropolis*, shown in Fig. 41, which was the centre of the religious life of Athens, rose abruptly from 200 to 300 feet above the lower city. Inside its walls stood the colossal figure of Athene, the Parthenon, and the Erechtheum. The approach from the city, through the magnificent Propylæa, was filled with works of art and commanded a fine view of hills and sea. Near the walls of the Acropolis were the theatre of Dionysus, the marble Odeum, the temple of Æsculapius, and other well-known buildings.

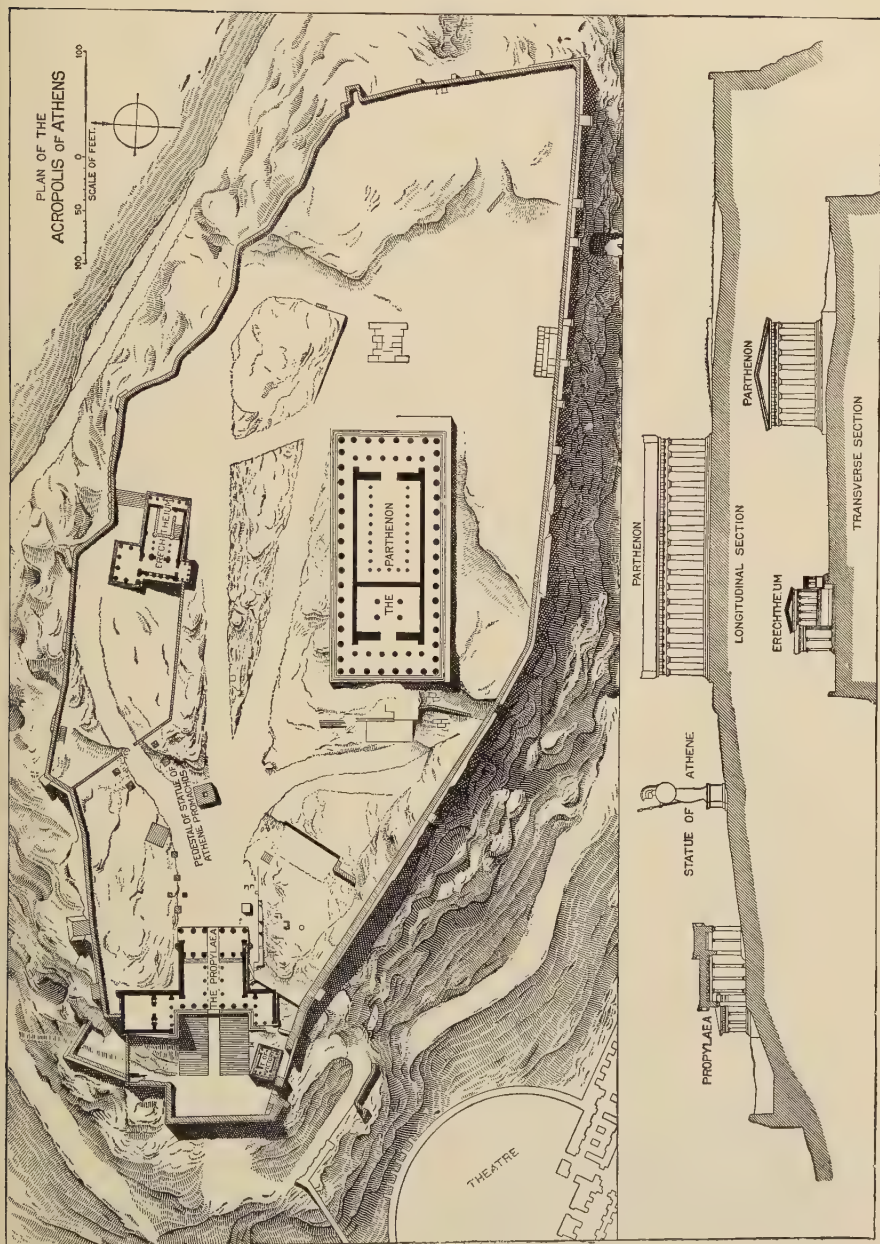


FIG. 41. PLAN AND SECTIONS OF ACROPOLIS, ATHENS

North-west of the Acropolis was the Hill of Ares, the Mars Hill of the New Testament, and beyond, on the summit of another hill, stood the altar of Zeus Hypatus. Many of the houses of the Athenian citizens were congregated at the foot of these hills and ranged round open spaces in which stood public buildings. East of the Acropolis was the Panathenaic stadium, or place for athletic contests, and beyond, outside the city walls, were the great gymnasia of the Athenians, the Academy, the Cynosarges, and the Lyceum.

As the centre of the commercial and social life of the town, the principal market place was surrounded by colonnades and adorned with portrait statues, an image of Zeus Eleutherius, and pictures of the twelve great gods. In it stood the senate house and the temple of Apollo Patroüs, and adjoining it were the statues of the Athenian tribal heroes, the pedestals of which served for exhibiting the official notices of the city. Other statues, temples, altars, and memorials were to be seen in such profusion as to cause the market place of Athens to resemble an exhibition of works of art. Generally speaking, the streets of the city were narrow, tortuous, unlighted, and unpaved, and the houses, built of wood or unbaked bricks, presented long lengths of plain walling to the squalid streets. The processional thoroughfares were somewhat wider and more imposing, and there the dwellings of the wealthier citizens were to be found.

96. Temples.—None of the numerous Grecian temples was equal in size to the largest religious buildings of Egypt. But the pre-eminence of the artistic genius of the Greeks found expression in beauty of proportion, refinement of detail and ornamentation, and in unequalled perfection of workmanship.

The Greek temple, in its simplest form, consisted of a single rectangular chamber, known as the *naos*, or *cella*, which contained the chief statue of the temple deity. A *pronaos*, or portico, was usually placed in front of the naos and sometimes a small chamber, known as the *opisthodomos* and used for storing treasures, was built out from the back wall of the temple proper, and behind it was a second portico, known as the *posticum*. Quadrangular temples were designated in accordance with the number and

arrangement of the columns placed externally on the ends and sides. A temple was termed (1) *astyle* when without columns ; (2) *in antis* with two columns placed between the two pilasters that terminated the side walls of the naos and projected to form a porch, as in the plan, Fig. 42 (a) ; (3) *prostyle* with four columns placed in the front of the building in advance of the line forming the antæ, as in plan (b) ; (4) *amphi-prostyle* with four columns placed in a similar manner at both ends of the building, as in plan (c) ; (5) *peripteral* with columns at each end and along each side, as in plan (d) ; (6) *dipteral* with two ranges of columns all round, as in plan (e) ; and (7) *pseudo-dipteral* with only one range of columns surrounding the walls of the naos in the position occupied by the outer columns of the dipteral temple, as in plan (f).

97. The temples, as well as the porticoes themselves, were also named according to the number of columns placed in the portico at either end of the temple. According to this system the temples and porticoes were divided into four classes :

1. Tetrastyle, with four columns in front.
2. Hexastyle, with six columns in front.
3. Octastyle, with eight columns in front.
4. Decastyle, with ten columns in front.

The end portion of a temple never contained more than ten columns in one range ; and when there were only two, these were always placed in *antis*. As a rule Greek temples have twice

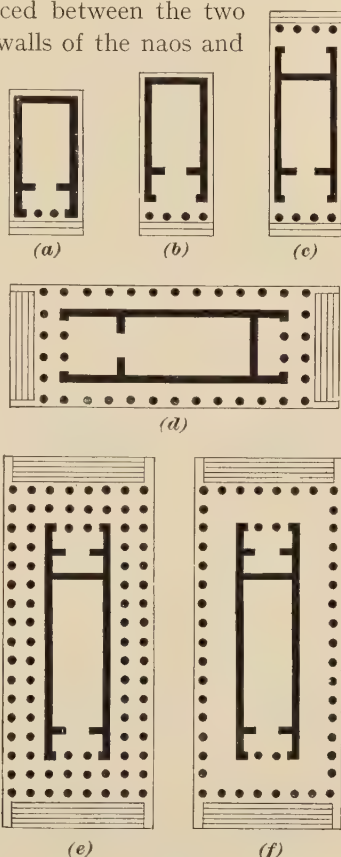


FIG. 42

as many columns along the side as *in front and one more*, counting the corner column in each case.

The number of columns at the sides was generally *uneven*, that at the ends invariably *even*. When the end portion of a temple was tetrastyle there were no detached columns at the sides, but when it was hexastyle or octastyle there were usually thirteen or seventeen columns at the sides, including the corner ones.

98. Circular temples were classified either as (*a*) *monopteral*, that is, formed of a circular range of columns finished with an entablature and thus presenting the appearance of an open arcade, or (*b*) *peripteral*, in which the circular chamber, comprising the naos, was surrounded by detached columns placed concentrically with its walls. Light was admitted to the temple in various ways; the circular monopteral and the rectangular, roofless temple, termed *hypæthral*, being altogether, or partially, open to the sky, received the light directly. Some small temples were lighted through the doorway alone; others through an opening in the roof or by windows in the end walls, but the lighting of those of the largest size has long remained a matter of surmise.

99. A peculiar feature of the Greek temples belonging to the best period of art is a systematic deviation from ordinary rectilinear construction, having for its object the correction of certain optical illusions. Many lines, that are straight and level in ordinary architecture, were worked by the Greeks in delicate curves, while lines usually perpendicular, were often given a slight inclination backwards or forwards as the case might require. The steps of the Parthenon, which are higher in the middle than at the sides, may be instanced, the rise being about $2\frac{3}{4}$ inches on the façades and $4\frac{3}{8}$ inches on the sides.

EXAMPLES OF GREEK ARCHITECTURE

ACROPOLIS, THEATRES, HOUSES, AND TOMBS

100. Prehistoric Age.—Fragments of rude stone walling, of remote antiquity, have been found in various parts of Greece, which, for want of more precise information, are usually assigned

to the mythological age. These remains, consisting of huge masses of roughly hewn stone set without mortar, as shown in Fig. 43, constitute what is known as *cyclopean* work and are said to mark the remote occupation of Greece by a tribe of sailors of Asiatic origin, called the Pelasgi. But the oldest complete structure now existent in Greece, the so-called Treasury of Atreus, at Mycenæ, see Fig. 44,



FIG. 43

shows a great advance on the primitive work of the cyclopean age. This structure, presumably constructed by some early colonists, comprises two subterranean chambers, the outer and

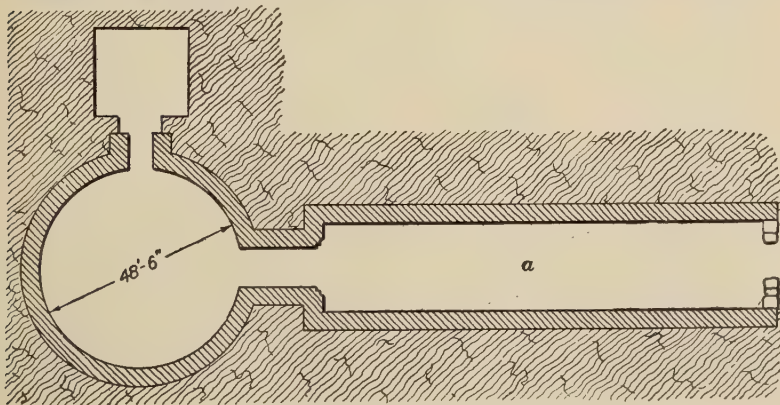


FIG. 44. TREASURY OF ATREUS, MYCENÆ

larger of which is circular in form. The larger chamber is entered by a wide opening placed at the end of a long *dromos*, or enclosed passage, *a*, the walls of which are built in parallel courses of rectangular stones. In Fig. 44A is a view of the *dromos* and the entrance of the circular chamber. Internally, this chamber has the appearance of a huge lime kiln.

Although arch-like in form its conical roof has not the properties of arch construction, as it is built in parallel projecting courses



FIG. 44A. TREASURY OF ATREUS, MYCENÆ

of stone corbellings laid horizontally. This is the largest and most perfect of many similar circular buildings to be found in Greece and elsewhere; the internal diameter of this curious structure is 48 feet 6 inches, and its height, from the floor to the covering stone at the apex of the conical roof, is 45 feet.

Another example of cyclopean work is the Gate of Lions, Mycenæ, shown in Fig. 44B. This is the principal entrance to the citadel. The opening is 10 feet high and the lintel is 16 feet long. Above the lintel is a thin triangular slab on which is a relief of two lions rampant on either side of a central half-column. The sculptured slab is 2 inches thick, and is of brown limestone.

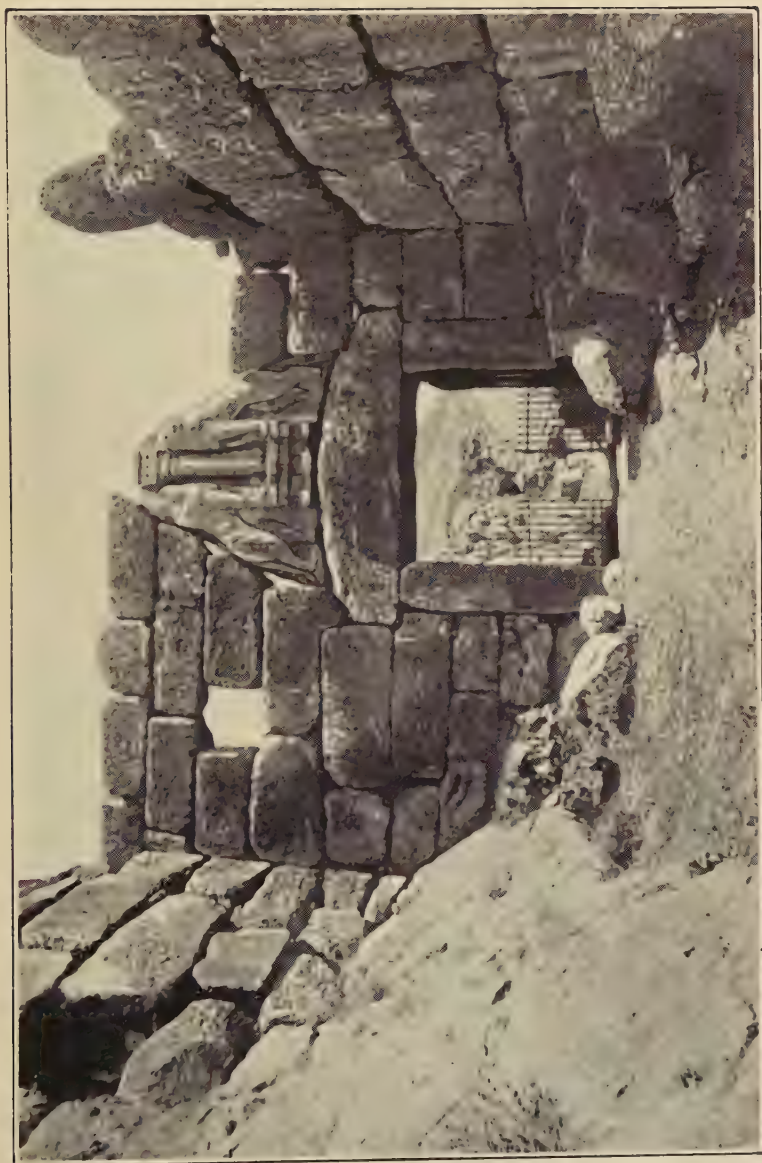


FIG. 44b. GATE OF LIONS, MYCENÆ

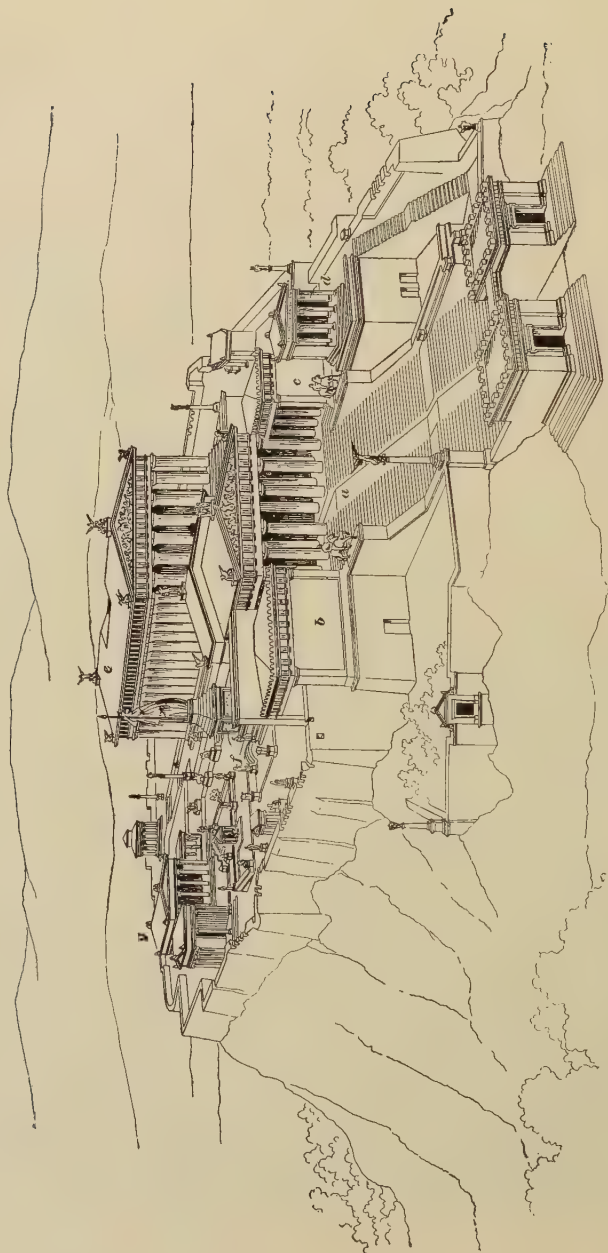


FIG. 45. VIEW OF ACROPOLIS RECONSTRUCTED

Authorities consider that the relief carving represents the most ancient example of sculpture existing in Europe.

The Gate of Lions is set in the massive walls which surround the citadel of Mycenæ, about 900 feet above sea level. The walling is formed of both rectangular (Fig. 44B) and polygonal blocks.

101. The Acropolis.

The architectural glories of Athens were centred on the famous fortified hill known as the **Acropolis**, or upper city. It is shown in plan, and in longitudinal and transverse sections, in Fig. 41, and in perspective in Fig. 45, as it would appear in reconstructed form. The Acropolis was approached by a magnificent marble staircase, at the top of which, at *a*,



FIG. 46. TEMPLE OF NIKE APTEROS



FIG. 47. RUINS OF THE PARTHENON

stood the *Propylæa*, or vestibuled gateway. This was a Doric

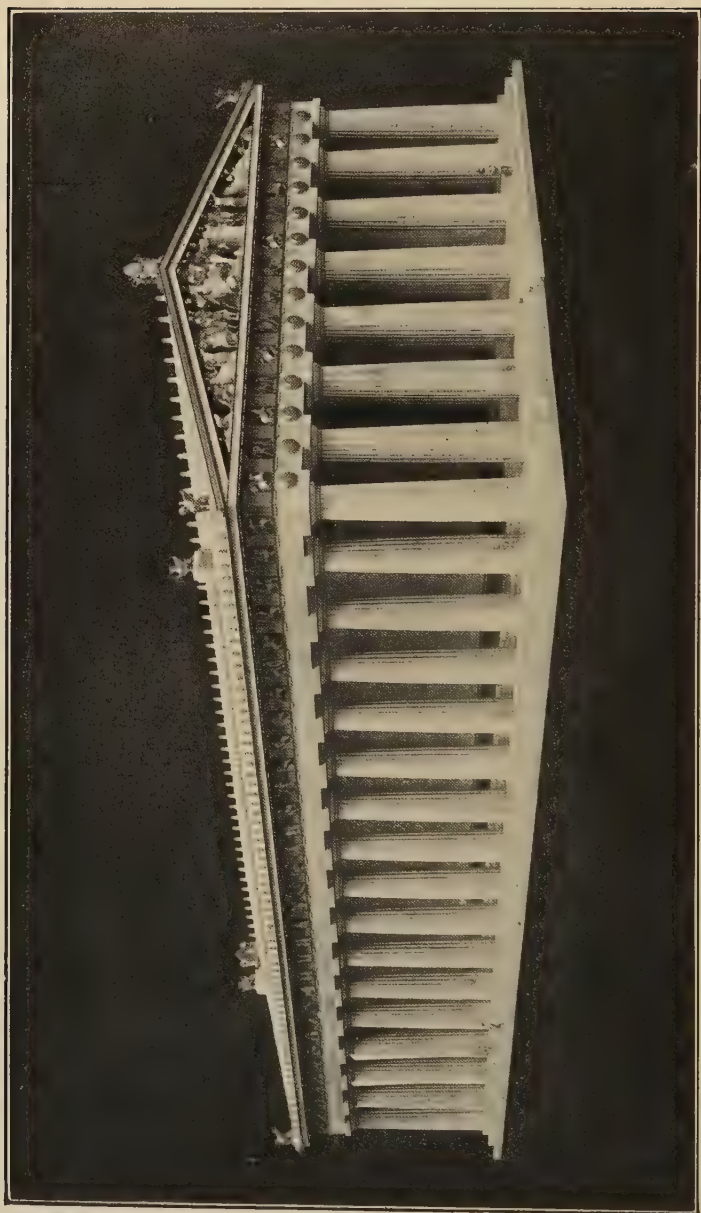


FIG. 48. THE PARTHENON, RECONSTRUCTED

structure of Pentelic marble the front of which extended a length of 170 feet along the western end of the Acropolis. It had a central hexastyle portico and two projecting wings *b* and *c* of a smaller order than that used for the main building. The Propylæa was designed by Mnesicles and erected in 437 to 432 B.C. The small temple of *Nike Apteros*, or Wingless Victory, which stood at *d*, on the right of the Propylæa, is a good example of a tetrastyle Ionic temple. A view of it in its restored form is given in Fig. 46.

102. South-east of the Propylæa on the summit of the Acropolis stood that supreme example of Greek art, the stately *Parthenon*, the most beautiful building of ancient or modern times; it is indicated at *e* in Fig. 45. This well-known Doric temple, peripteral octastyle in form, as seen from Fig. 41, was erected about the year 438 B.C. by the architects Ictinus and Callicrates and dedicated to *Athene Parthenos*, meaning Athene the Virgin. Fig. 47 shows the present appearance of the Parthenon, and Fig. 48 its conjectural restoration. Its length was about 228 feet, its breadth 101 feet, and its height, to the apex of the pediment, 65 feet. It stood upon a stylobate, or base of three steps, and in addition to its outer columns, which were over 34 feet in height and more than 6 feet in diameter, the Parthenon had an inner hexastyle pronaos, or porch, at its east and west fronts. The temple was perfectly regular and symmetrical both in plan and elevation. It contained a naos, or cella, 98 feet long and 63 feet wide, in which stood a colossal statue, 40 feet in height, of the Virgin Goddess Athene, also called Minerva, and behind the naos an *opisthodomos*, or treasury. Both the naos and the opisthodomos had internal columns which probably supported a timber roof covered with marble tiles. But, unfortunately, all traces of the roof have long since disappeared, nor are there any roofs to be found among the remains of other Greek temples. Consequently the manner in which they were constructed and, above all, how the naos and the opisthodomos were lighted, are subjects on which authorities differ. The upper parts of the outer walls of the naos were enriched with a continuous frieze, 524 feet in length, containing carved representations, in low relief, of the Panathenaic processions. This frieze

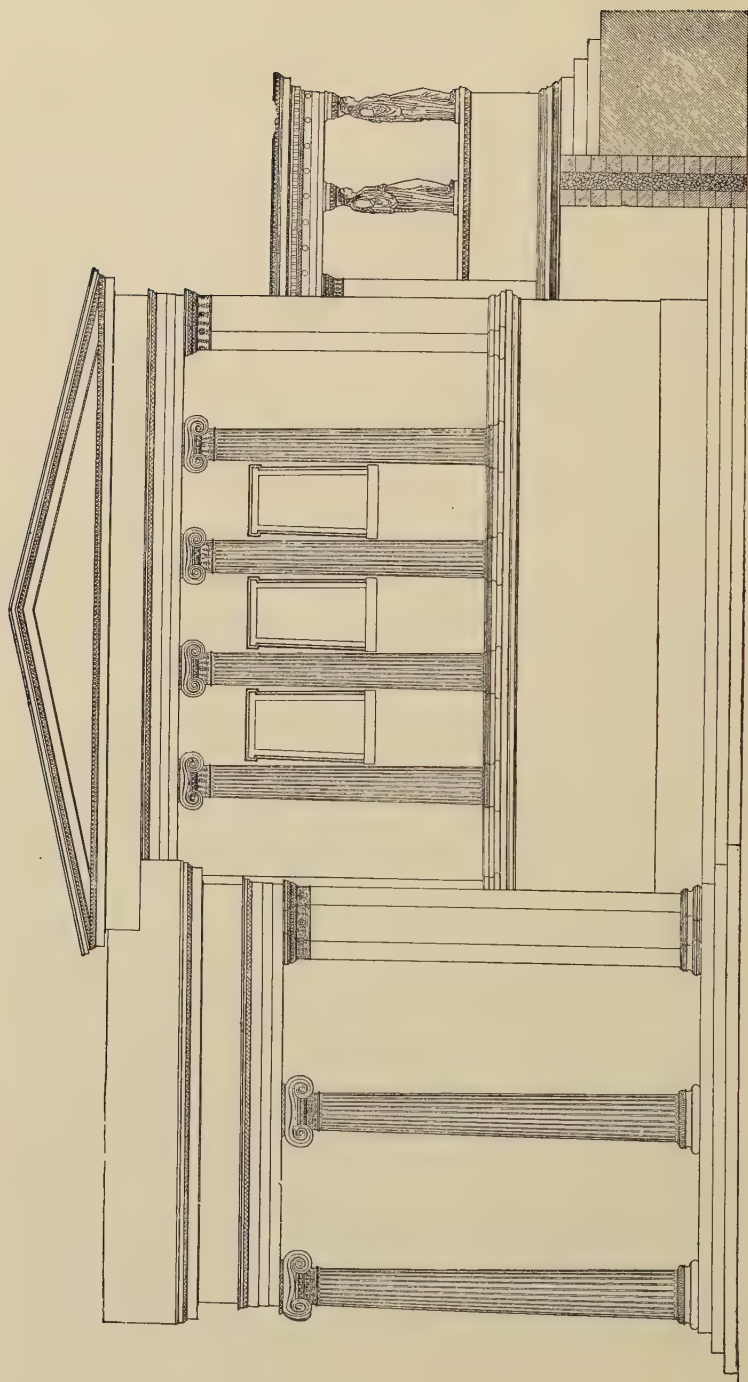


FIG. 49. THE ERECHTHEUM ON THE ACROPOLIS

was the work of the great sculptor Phidias and his assistants, who also carved the sculptured groups in the pediments and metopes of this temple.

103. The Erechtheum on the Acropolis shown at *g*, Fig. 45, is said to have been built in the time of Pericles, to replace the

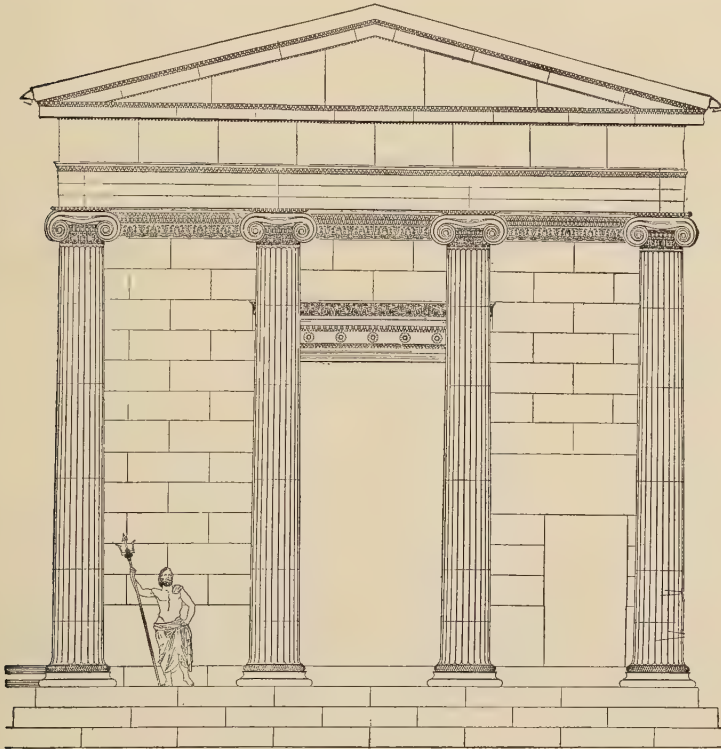


FIG. 50. NORTHERN PORTICO OF ERECHTHEUM

original sanctuary of the tutelary deities of Athens, namely, Athena Polias, the goddess of the city, Poseidon, and Erechtheus, which was burnt by the Persians in 480 B.C. Although the component parts of this building, in themselves, were unrivalled examples of the Ionic style, yet, regarded as a single building, the Erechtheum was one of the most unorthodox and heterogeneous compositions to be found in ancient art. It adjoined the northern

wall of the Acropolis, as seen in Fig. 41, and consisted of a double temple, shown in elevation in Fig. 49, of which the eastern division was consecrated to Athene Polias and the western, including the north and south porticoes, to Pandrosus, and therefore called the *Pandroseum*. The portico entrance of the temple of Athene Polias consisted of six Ionic columns and the northern

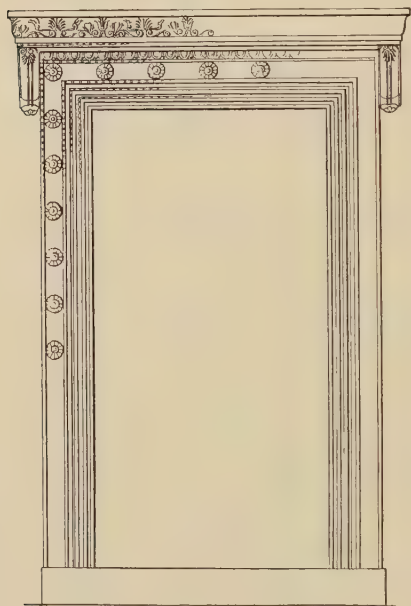


FIG. 51. DOORWAY OF ERECHTHEUM

portico, or pronaos, of the Pandroseum had four Ionic columns in front and one on each flank. In the southern portico *caryatides*, or female figures, took the place of the usual order. The diversity of scale and the want of harmony between the component parts of this building, or buildings, for some writers regard the Erechtheum as a group of three temples, will be seen on reference to the following illustrations: Fig. 50, representing the front elevation of the northern portico entrance; Fig. 51, a detail elevation of the doorway; Fig. 52, the front elevation

of the south portico; and Fig. 53, a detail drawing of one of the *caryatides*.

104. Monument of Lysicrates.—Early and crude examples of the Grecian Corinthian capital are to be found in the interior of the temple of Apollo Didymæus at Miletus, in Ionia; but the only perfect columnar example of this species of capital, at its best, is seen in the refined and beautiful building at Athens known as the Choragic Monument of Lysicrates, shown in Fig. 54. This small structure consists of a quadrangular basement *a* which, by means of the stylobate *c*, supports a cylindrical

superstructure *e*, to which six Corinthian columns *d* are attached. The upper part of the cylindrical wall *e* is carried up above the entablature and terminates in a very flat and richly ornamented dome, or *tholus*, crowned by a foliated *acroterium*, or finial. It is conjectured that the summit was originally finished with a tripod *b* supported by dolphins. The total height of this monument is about 35 feet, and the diameter of the cylindrical wall about 6 feet. It was erected in 334 B.C. in memory of the victory won by Lysicrates in dramatic contests.

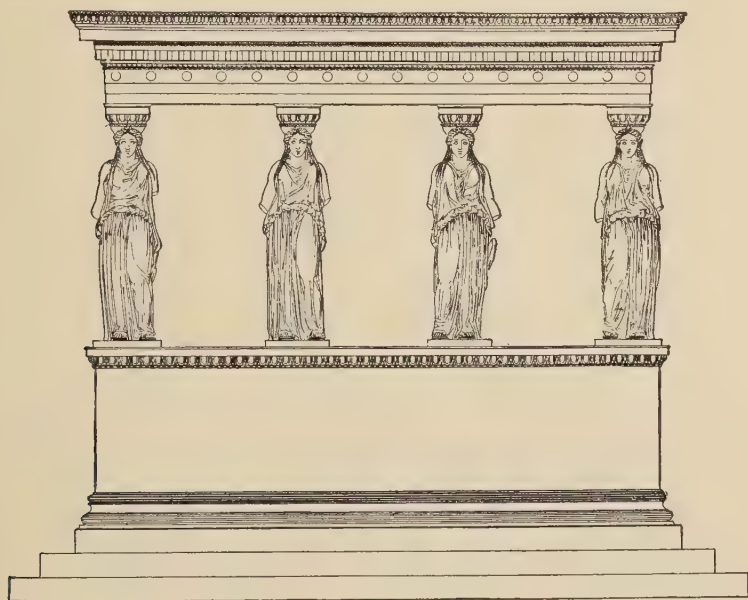


FIG. 52. ERECHTHEUM, SOUTH PORTICO

105. Tower of the Winds.—The well-known Tower of the Winds, Fig. 55, once adorned one of the smaller market places at Athens and served the double purpose of a town clock and a weathercock. This structure, which is octagonal in plan, had two projecting porches, consisting of Corinthian columns without bases, supporting entablatures and pediments. The grooves in the stone through which the water ran to work the *clepsydra*, or water clock, can still be seen. A bronze triton crowned the

summit of the roof and turned with the prevailing wind. Sundials were traced on the upper part of the walls of the building above which were emblematic representations, in relief, of the prevailing wind blowing from the quarter toward which the particular side of the building faced. This interesting example of late Grecian architecture was built about the first century B.C.



FIG. 53

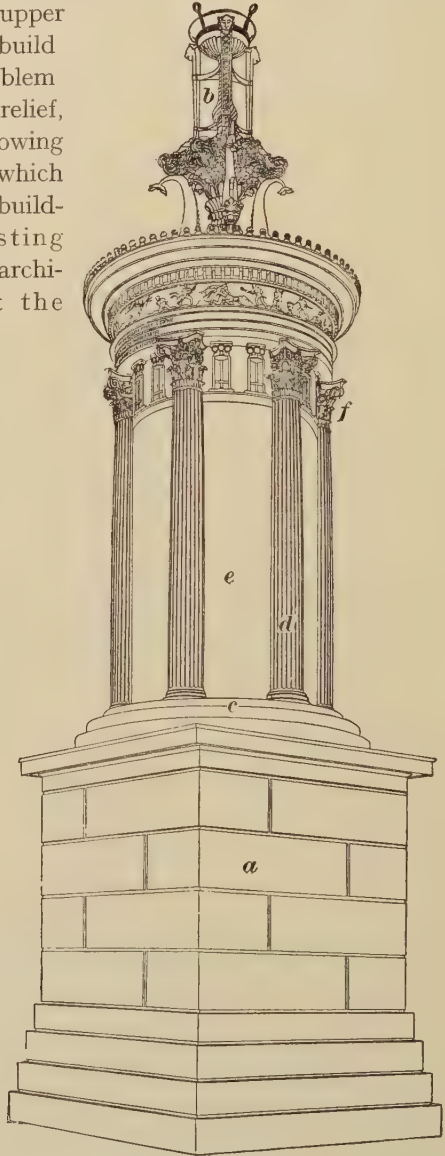


FIG. 54. MONUMENT OF LYSICRATES, ATHENS

106. Theatres.—The immense roofless theatres of the Greeks, an example of which is shown in Fig. 56, at first consisted of two principal parts, namely, the circular *dancing place a*, or orchestra, which contained the *thymele*, or altar, *b* of the god, and the place *c* for the spectators or the theatre proper. In form the latter was somewhat greater than a semicircle, and its seats, which rose one above the other in concentric tiers, were cut in



FIG. 55. TOWER OF THE WINDS, ATHENS

the rock of the hillside upon which the theatre stood. When the choruses, for which Greek theatres were first used, had developed into the drama, a structure *d*, called the *skene*, whence the word *scena* or scene is derived, was added to the theatre together with a stage *e* for dramatic representations. These were placed on the side of the orchestra farthest from the spectators and at varying heights and distances, to allow of an uninterrupted view of the stage from all parts of the auditorium.

Greek theatres were of immense size, some having a diameter of over 600 feet.

107. Houses.—Greek houses were divided into two parts, one of which was known as *andronitis*, and assigned to men, the other, *gynaikonitis*, to women, the rooms of the latter being situated at the back of the house, or, occasionally, in an upper story. In the plan of the house, Fig. 57, the front door enclosed

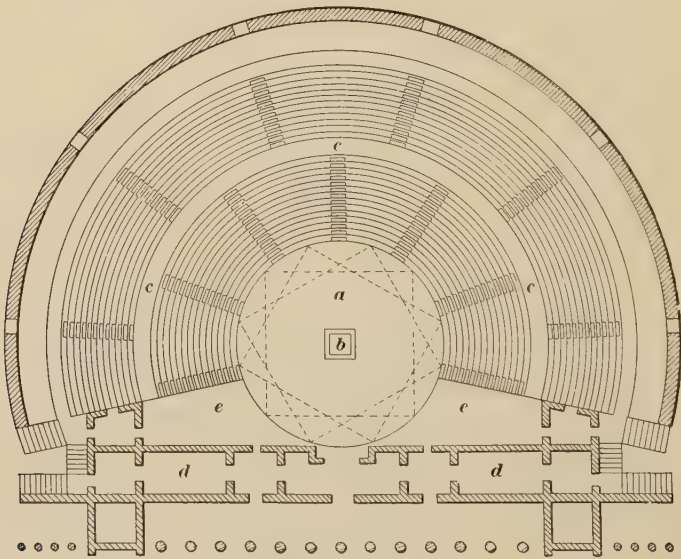


FIG. 56. PLAN OF GREEK THEATRE

a small vestibule *a*, called the *prothyron*, on either side of which were the doorkeeper's rooms and chambers *b* for work or business. An altar to *Zeus Herkeios*, the patron deity of domestic life, stood at *c* in the middle of the central open court, which was lined on three sides with columns and gave access to the living rooms, to the cells for the slave attendants, and to the bed-chambers and store rooms, all indicated at *d*. Two pilasters marked the entrance to a hall *e*, known as the *prostas*, where the family met at their meals in common. The *thalamos*, or sleeping chamber of the master of the house, was at *f* at one side of the

prostas; on the other, at *g*, was the *amphithalamos* for the daughters of the house. A door in the farther wall of the prostas led to the *mesaulos*, or the workrooms *h* of the female servants. Larger houses had a second court, or *peristylon*, which was entirely surrounded by columns. The roof of the Greek house was usually flat and the rooms received their light from doorways opening into the court. Often a garden was at the rear of the house, to which access was obtained through a doorway in the central room *h*.

108. Tombs.—Although most of the monumental tombs in Greece proper possessed little architectural value, yet some beautiful monuments have been found among the Greek colonies in Caria, Lycia, and elsewhere. Of these structures the most magnificent was that erected to *Mausolus* at Halicarnassus about 352 B.C., which was regarded as one of

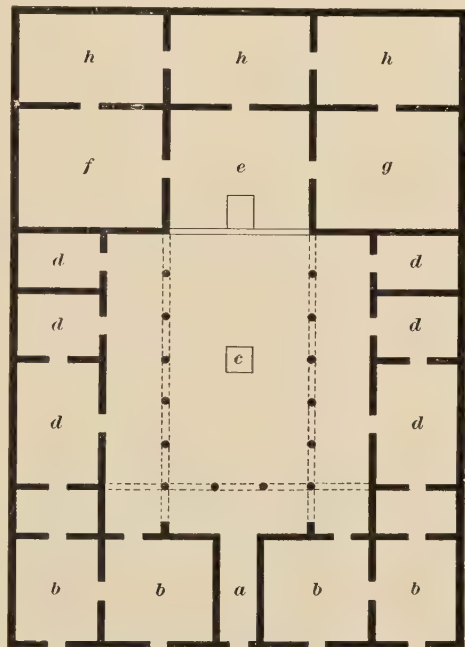


FIG. 57. PLAN OF GREEK HOUSE

the seven wonders of the ancient world. It comprised a lofty basement, 100 feet long by 80 feet wide, supporting an oblong building, which was surrounded by thirty-six Ionic columns and carried an entablature and a stepped pyramidal roof. This richly embellished tomb was crowned at its summit, 140 feet from the ground, by a chariot group in white marble. The structure was erected in memory of Mausolus of Caria by Queen Artemisia II and was adorned with sculptures of eminent Greek artists. Portions of these works may be seen in the British Museum.

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND OTHER DETAILS

109. Plans.—The plans of Greek buildings, which were marked by extreme simplicity, were usually rectangular in form. But exceptions are to be found in a few small circular temples and in the Choragic Monument to Lysicrates, the Tower of the Winds, and the Erechtheum at Athens. Evolved from a basis of design of which symmetry and regularity were prominent features, external effect was obtained by the free use of beautifully proportioned columns set upon well-emphasized stylobates and crowned with richly ornamented entablatures.

110. Walls.—As workers in stone and marble the ancient Greeks stand unrivalled for the art and skill displayed in their craftsmanship. The mathematical precision with which blocks



FIG. 58. TEMPLE OF JUPITER, ÆGINA

of marble were prepared, jointed, secured in position, and finished by Greek workmen, without the use of mortar, is little short of

marvellous. The modern system of forming the core of a wall with rubble or concrete between facings of wrought stone was unknown to the Greeks, who constructed walling throughout its entire thickness with solid blocks of masonry. When great solidity of construction was required these blocks were of enormous size.

111. Roofs.—Doubtless many of the temples were *hypæthral*, or open to the sky, but some were probably covered with low-pitched roofs, of timber construction, and finished with tiles of marble or clay. The new feature in architecture invented by the Greeks, namely, the *pediment*, which became the crowning member of their temple architecture, seems clearly to indicate the form of roof that was used. By *pediment* is meant the triangular space formed by the cornice and the apex of the roof. An example of a Greek pediment is shown in Fig. 58, which represents the restored Temple of Jupiter, at Ægina.

112. Openings.—The square heads of the tapering door and window openings were finished with stone lintels; and the simple mouldings, such as architraves and slightly projecting cornices, with which they were adorned, were designed with the greatest skill and judgment. A Greek window is shown in Fig. 59.

113. Mouldings.—Greek mouldings are distinguished by a subtle charm, due in a great measure to the free nature of their flowing curves which are more suggestive of elliptical than of circular forms. Carved or other ornamentation was never applied to the variety of mouldings, known as the *fillet*, *scotia*, or *cavetto*, and the enrichment of other

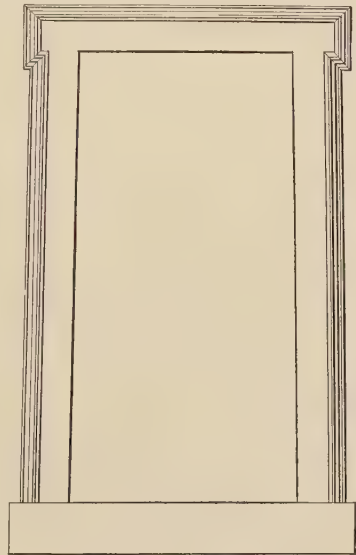


FIG. 59

mouldings was based on the principle that the decoration should

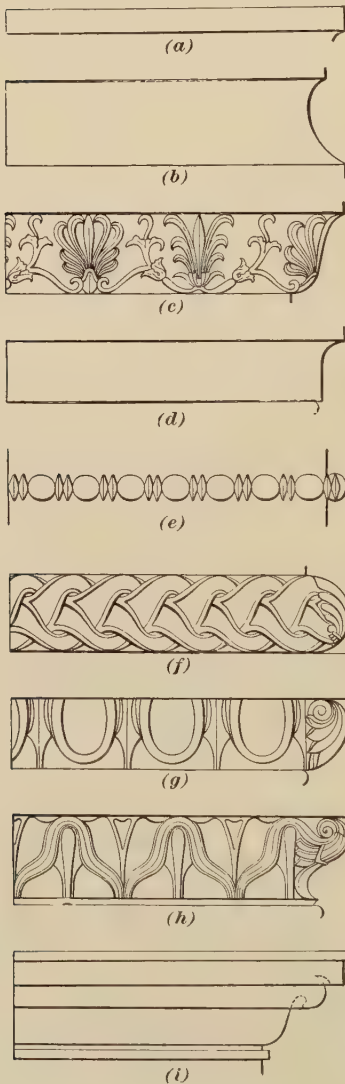


FIG. 60

correspond in outline with the profile to which it was applied.

The mouldings, nine in number, are shown in Fig. 60. They are known by the following names :

1. The *fillet*, or narrow band, shown at (a).

2. The *scotia*, or hollow, at (b).

3. The *cyma-recta*, *cymatium*, or double curve, at (c).

4. The *cavetto*, or hollow, at (d).

5. The *bead*, or astragal, at (e).

6. The *torus*, or large convex, moulding, at (f).

7. The *ovolo*, or egg-shaped, moulding, at (g).

8. The *cyma-re-versa*, another moulding formed with a double curve, at (h).

9. The *hawk's-beak* moulding formed with a combined convex curve and hollow, at (i).

Of the above mouldings, the fillet and the scotia are intended to separate contrasting parts and to strengthen

the effect of other mouldings ; also to form an effective finish to flowing profiles, and to prevent confusion through the immediate junction of convex members. The cyma-recta and the cavetto are designed to serve as finishing or crowning members of other mouldings ; the bead and the torus assist in binding, strengthening, and emphasizing the parts in which they occur, and the ovolo and cyma-reversa are used where strength is required to support other members of the composition. The hawk's-beak moulding was commonly used in Doric antæ capitals and bears a distinct resemblance to a well-known Gothic moulding.

THE GREEK ORDERS

114. The Doric Order.—The general proportions of the three orders of architecture used by the Greeks have already been mentioned ; but it is necessary to describe in some detail the arrangement of the component parts of the three main members, that is, the stylobate, the column, and the entablature. Fig. 61 (*a*) represents a portion of the Grecian Doric pediment and columns of the temple of Minerva at Athens and well illustrates the usual proportions of this order. In this example the height *a* of the capital, including the *necking*, is rather less than half the diameter of the shaft measured at its base. By *necking* is meant the moulding or groove which terminates the shaft of the column at its junction with the capital. In addition to the necking the capital consists of an *echinus*, or ovolo, *b*, and an *abacus*, or square slab, *c* ; the lower part of the capital is encircled by three or four rings *b'*, called *annulets*. As to the shaft, it diminishes in a slightly curved line from its base, or lower diameter, to its termination under the lowest member of the capital, where its diameter is from two-thirds to four-fifths of that at the base. The shaft is usually divided into twenty flutes, or vertical sinkings, which are either segments of circles, semiellipses, or other curves, and meet in an *arris*, or edge, as shown in Fig. 62 (*a*) and (*b*), which represent cross-sections through two different columns, (*a*) showing the flutes as circular segments and (*b*) flutes made from semielliptical curves. The flutes follow the diminution of the column through the necking to the annulets of the capital,

under which they finish with either straight or curved heads. The stylobate, arranged in three equal-stepped courses, is usually from two-thirds to a whole diameter of the column in height.

115. The entablature, Fig. 61 (a), varies from one and three-quarters to rather more than two diameters in height. Four-

fifths of the total height is nearly equally divided between the architrave and frieze, the remaining one-fifth being given to the cornice. The architrave is a plain deep band for four-fifths, and sometimes five-sixths,

of its whole height; the remaining fifth, or sixth, is given to a continuous fillet *d*, called the *tænia*, and to the bands, or *regulæ*, from which six small cones, or *guttæ e*, are

suspended, placed below the *tænia*, and attached to it in lengths equal to the breadth of the triglyphs above. The frieze is finished with a slightly projecting fascia and is divided horizontally into *triglyphs f* and intervening spaces *g*, called *metopes*, which regulate the *intercolumniations*, or distances, between the columns. Triglyphs are usually

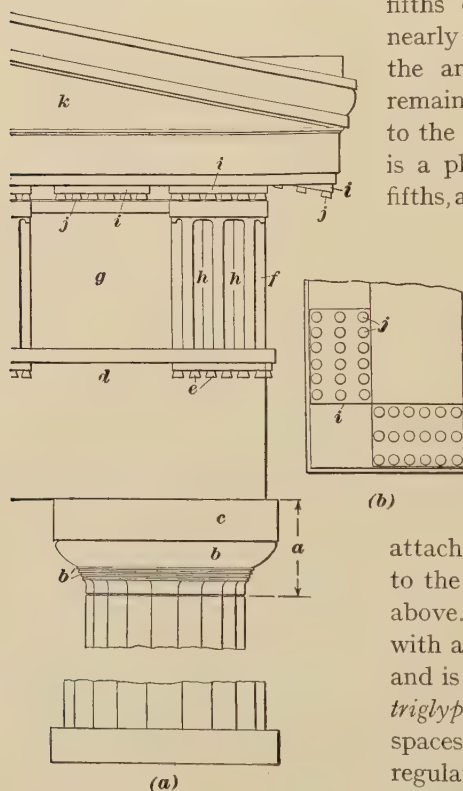


FIG. 61

nearly a semidiameter in width, while the metopes are exact squares. The fascia of the frieze is slightly increased in depth where it breaks round the triglyphs which have vertical sinkings, or *glyphs h*, each one-fifth of the width of the triglyph in which they are worked. Each triglyph has two whole, and two half

glyphs on its slightly projecting face from which the metopes *g* recede like sunk panels.

116. The cornice projects from the face of the triglyphs a distance equal to its own height. It is often divided vertically into four equal parts, one of which is given to the square, projecting fillet, and mouldings at the top ; two parts to the *corona*, or flat projecting face of the cornice ; and the remainder to the narrow sunk face below it, which receives the *mutules i*, Fig. 61 (*a*). The latter, which form the *soffit*, or under side, of the cornice, are cut in an inward direction at an angle of about 80° with the vertical

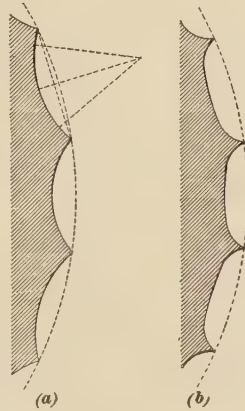


FIG. 62

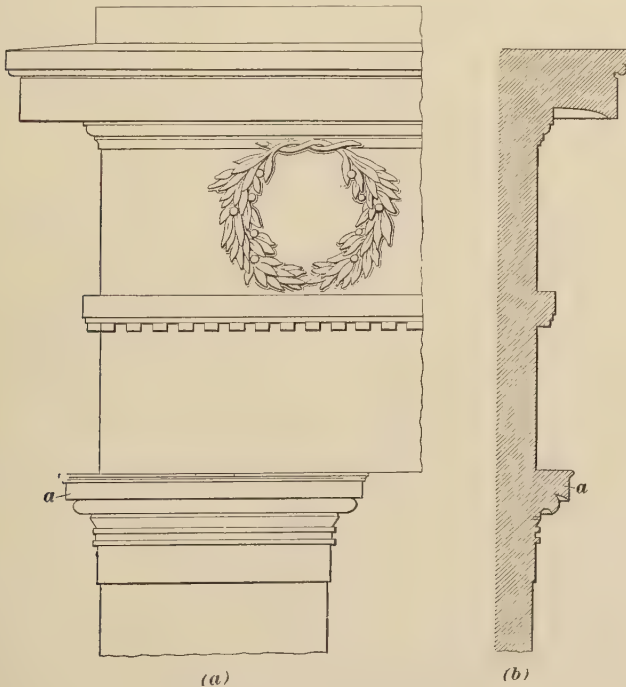


FIG. 63

face, and their width is governed by that of the triglyphs below them. In addition to those over the triglyphs a mutule is placed over every metope and all are ornamented with three rows of

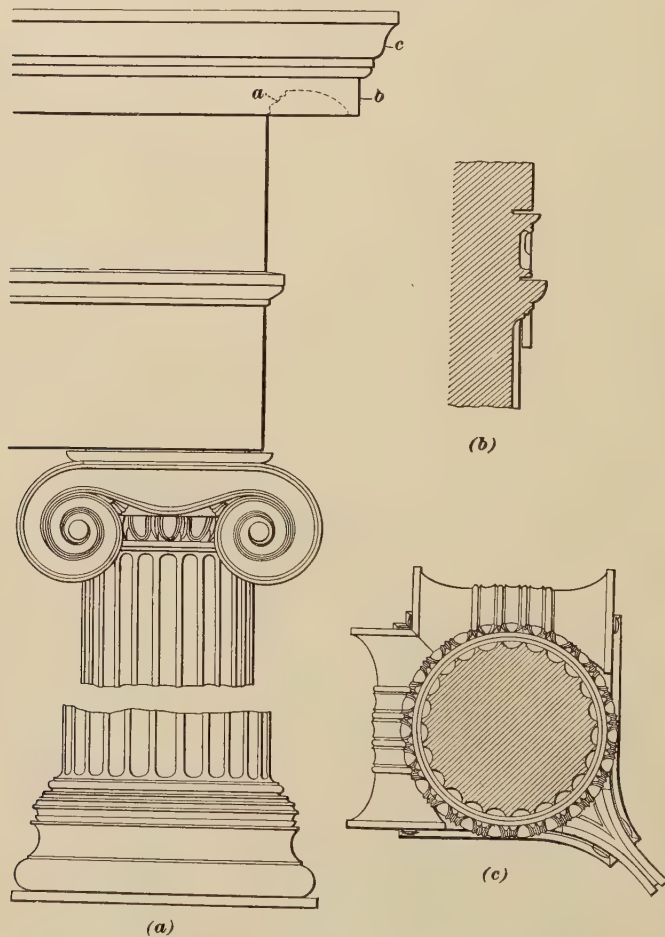


FIG. 64

six guttæ *j*. A plan of the soffit of the cornice, showing the mutules, is given in Fig. 61 (*b*).

117. The pediments of Doric temples were usually about one and one-half diameters in height at the apex of the tympanum

which, in a hexastyle building, made an angle at the base of about 14° . When a pediment occurred an additional moulding, sometimes a cymatum, sometimes an ovolo with a fillet over it, was

added to the cornice which, without its mutules, was returned round the raking sides of the *tympanum*, or flat surface bounded by the mouldings of the pediment, as at *k*, Fig. 61 (*a*). Ornaments, known as *acroteria*, based on plant or floral forms, were often placed at the apex and feet of pediments. The cornice on

the flank of a Doric temple sometimes supported a row of ornamental tiling, called *antefixæ*, which covered the ends of the joint tiles. Fig. 63 (*a*) is an elevation and (*b*) a section of a Grecian entablature showing the application of the *antæ*. By *antæ* is meant the *pilasters*, or square columnar projections, that terminated the side walls of the temples. The pilaster cap *a* has the hawk's-beak moulding.

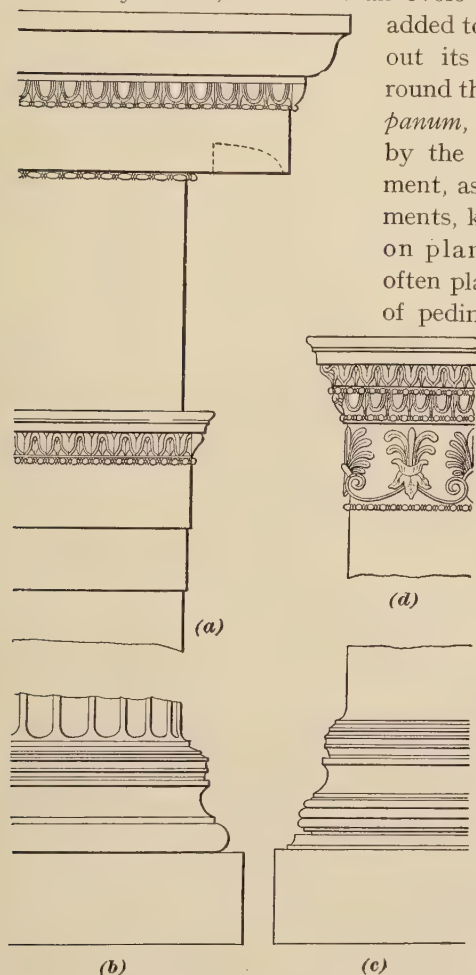


FIG. 65

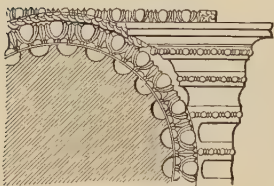
118. Ionic.—The stylobate of this order is usually constructed with three equal steps the united height of which is from about four-fifths to one diameter of the column, measured at its base. Including its base, shaft, and capital, the Greek Ionic column,

Fig. 64 (a), is rather more than nine diameters in height, and the capital, with the carved bead which separates it from the *flutes*, is from three-fourths to seven-eighths of a diameter high. The base is divided into three nearly equal parts the lowest of which,

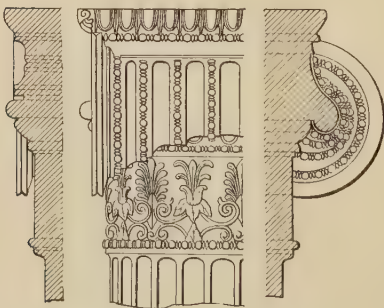
comprising a torus moulding with or without a base fillet, rests on the top of the stylobate and is separated from the intermediate moulding, a scotia, by a small fillet. Another fillet, at the top of the scotia, separates the latter from the series of small mouldings which form the top division of the base.



(a)



(b)



(c)

(d)

(e)

FIG. 66

119. The shaft, Fig. 64 (a), diminishes from its lower or greater diameter to about five-sixths of it immediately under the lower part, or necking, of the capital. It is fluted with twenty-four sinkings and alternating *fillets*, the former being semielliptical in plan and the latter nearly one-fourth of the width of the flute. Above the neck of the capital there is an enriched ovolo

moulding. The crowning member of the capital includes the spreading volutes, three-fifths of a diameter in height, which, on face, have a combined width of one and one-half diameters and are about a semidiameter apart. Above is a rectilinear abacus, moulded to an ovolo form and often enriched with egg-and-tongue ornamentation.

A half-section of the capital is shown in Fig. 64 (b). As the capitals of this order are parallelogrammic in plan, their faces being voluted and their

ends concaved in the form of a bolster or barret, as in Fig. 64 (c), it is obvious that the capital of a column placed at the angle of a portico differed in appearance from the others. To remedy this defect corner capitals were sometimes formed with angular volutes bent out at an angle of 45° , then inclining to the front and side and presenting voluted faces each way as in Fig. 64 (c).

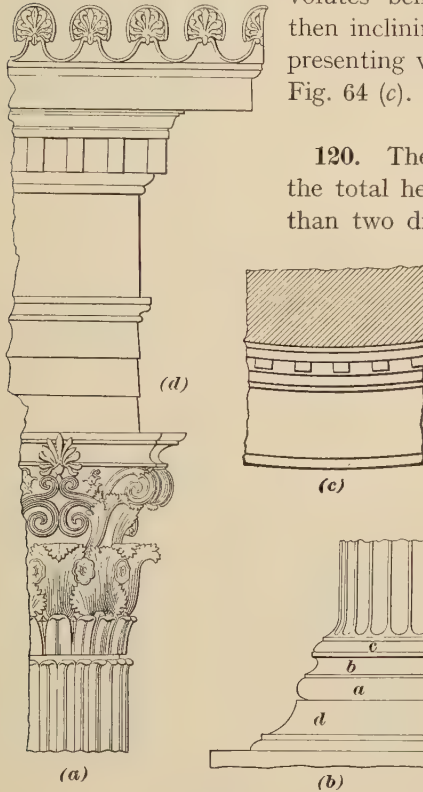


FIG. 67

120. The entablature, Fig. 64 (a), the total height of which is rather more than two diameters, can approximately

be proportioned by dividing the whole height into five parts, four of which may be equally subdivided between the architrave and the frieze, and the remainder given to the cornice. The latter, which includes a bed moulding shown dotted at *a*, a corona *b*, and a crown moulding *c*, projects from the face of the frieze a distance rather in excess of its own height. Sometimes the architrave of this order is divided into three equal *fasciæ* which slightly project

one over the other, as in Fig. 65 (a), which represents the Ionic entablature of the temple of Minerva Polias at Athens. The first, or lowest, of these *fasciæ* lines with the face of the lower diameter of the column, as shown at (a), and if the whole height of the architrave is divided into nine parts, seven may be given to the *fasciæ* and the remaining two-ninths to the band of enriched mouldings separating the architrave from the

frieze. The base of the corresponding antæ is shown at (c) and its capital at (d).

Fig. 66 illustrates a richly embellished example of an Ionic capital from the Erechtheum at Athens, in which (a) is an elevation; (b) a sectional plan, looking up; (c) a transverse section; (d) a side elevation; and (e) a section through the barrel of the volute. Ionic pediments are flatter than those of the Doric order, the angle made by the covering cornice with the base being, in a hexastyle example, less than 14° .

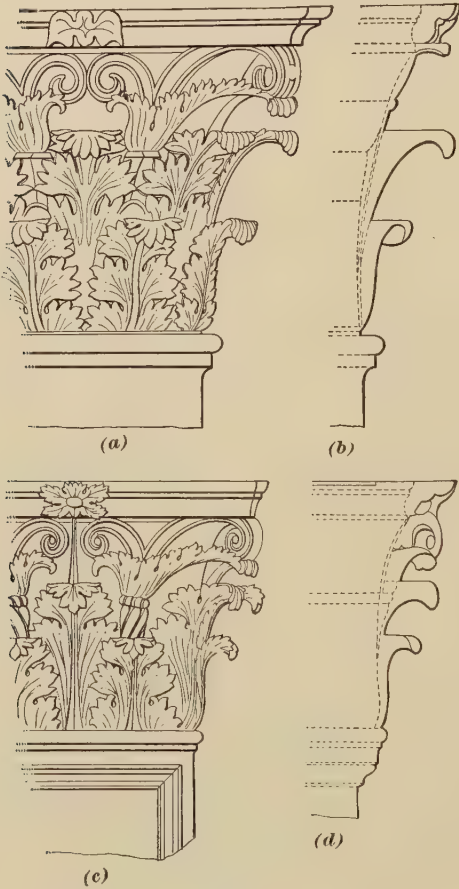


FIG. 68

121. Corinthian.

The Greek Corinthian column, which is ten diameters in height, diminishes at the *hypotrachelium*, or necking, to five-sixths of its greatest diameter. Its twenty-four semielliptical flutes terminate in leaves at the commencement of the capital, the latter being rather more than one and one-third

diameters in height. In the example given in Fig. 67, which is from the Choric Monument of Lysicrates, the capital, column, and entablature are shown at (a), the base of column and top moulding of pedestal at (b), and an inverted plan of the soffit of the

entablature at (c). The cylindrical core of the capital is banded by a lower row of leaves one-sixth in height of that of the whole capital. Above is a row of acanthus leaves which occupy one-third of the height of the capital ; rather more



(a)

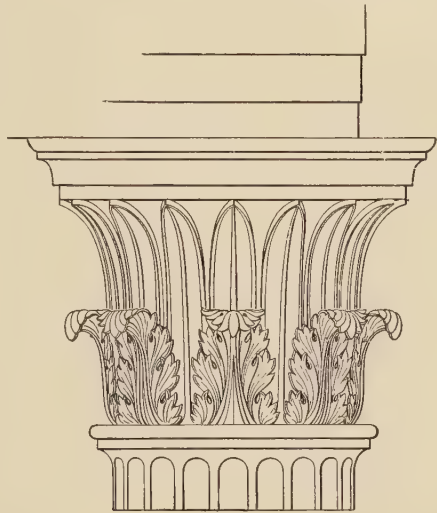
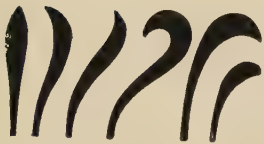


FIG. 69



(b)



(c)

FIG. 70

than another third of the height is given to the top group of foliations, consisting of calyces and tendrils placed under the abacus. In profile, the abacus consists of a narrow fillet and a cavette, the latter being separated from the ovolo moulding which surmounts the abacus by a second fillet. In plan the abacus is a square, but its angles are cut off at right angles to the respective diagonals and its sides are concaved. The base of the column, shown at (b), consists of a lower torus moulding *a* separated by a small fillet from a scotia *b*, and an upper torus, or reversed ovolo, *c*, placed

between fillets. At *d* is the top moulding of the pedestal



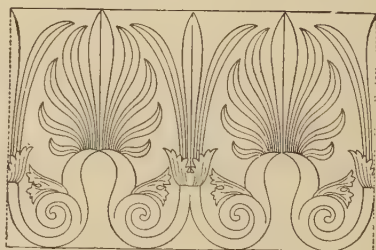
(a)



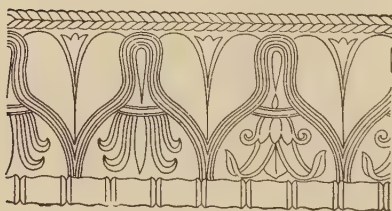
(b)



(c)



(d)



(e)

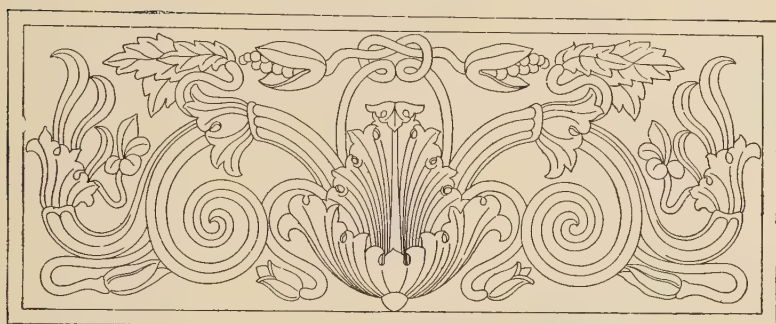


(f)



(g)

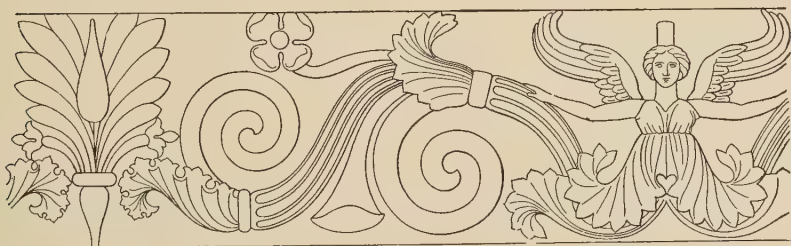
FIG. 71



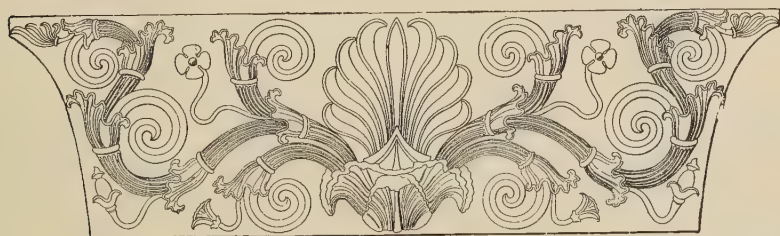
(a)



(b)



(c)



(d)

FIG. 72

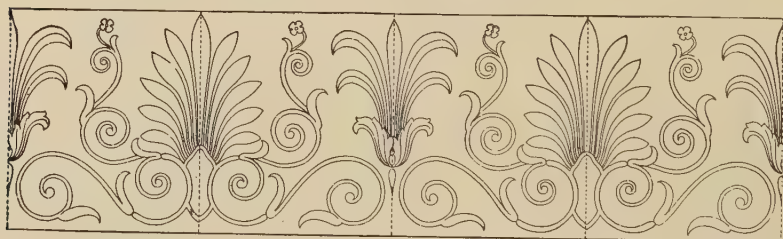


FIG. 73



(a)



(b)



(c)



(d)



(e)



(f)



(g)

122. Corinthian entablatures are about two and three-sevenths diameters in height. The architrave, as seen in Fig. 67 (*a*), is divided into three equal faces each of which has a slight inclination inwards; the frieze, a plain band, projects slightly in front of the architrave. By undercutting the soffit additional height is obtained for the bed mould, which is often embellished with dentils and egg-and-tongue ornamentation. The corona is usually

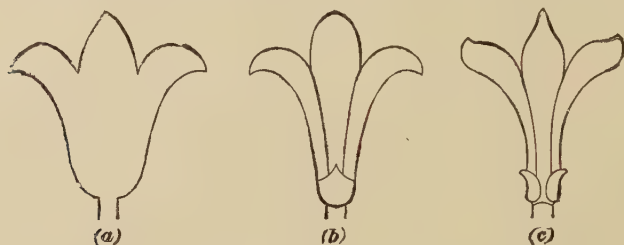


FIG. 75

finished with a small crown moulding and fillet, surmounted by honeysuckle antefixæ. Fig. 68 illustrates a Greek Corinthian capital of another type. Here the view (*a*) shows the capital, (*b*) its profile, and (*c*) and (*d*) the capital and profile of the corresponding antæ. Fig. 69 shows a Corinthian capital from the Tower of the Winds at Athens, which is remarkable from the fact that it has no volutes.

123. Ornamentation.—Greek ornamentation is conventional in character and possesses comparatively little variety. Running

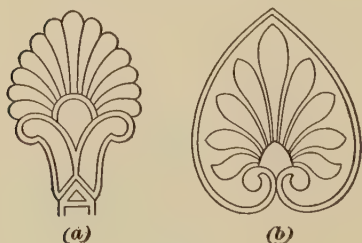


FIG. 76

ornaments, such as the fret, or meander, the acanthus, the honeysuckle, and the lotus, were all freely used, but the plain scroll formed the main feature of Greek decorative design. The acanthus leaf, which appears both in the carved Corinthian capitals and

in flat, painted decoration, originated with the Greeks, but in much of their other ornamentation Egyptian and other influences can be traced



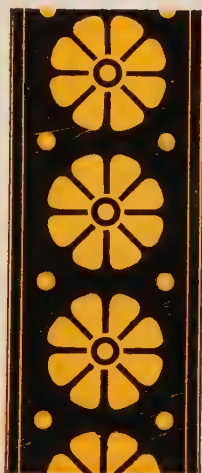
(a)



(b)



(c)



(d)



(e)



(f)



(g)



(a)



(b)



(c)



(d)



(e)



(f)

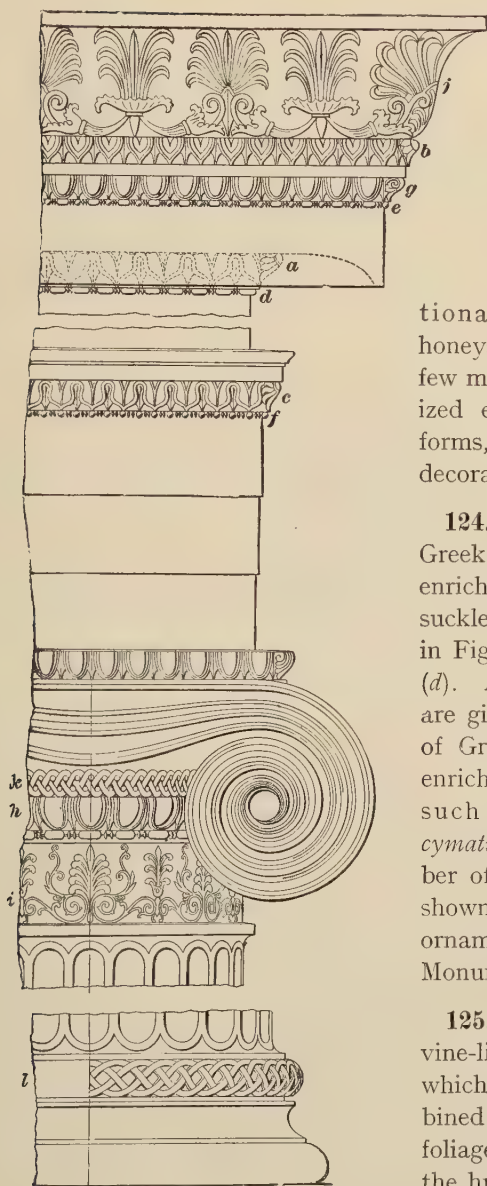


FIG. 79

An illustration is given of the broad acanthus leaf used in the capitals of the columns at the Tower of the Winds, at Athens, in Fig. 70 (*a*); at (*b*) is a slightly conventional rendering of the honeysuckle, and at (*c*) a few more fully conventionalized examples of natural forms, applied to painted decoration.

124. Various examples of Greek borders, or running enrichments, of the honeysuckle type of design appear in Fig. 71 (*a*), (*b*), (*c*), and (*d*). At (*e*) and (*f*) examples are given of the application of Greek ornament to the enrichment of mouldings, such as the ovolo and *cymatium*, or crowning member of a cornice. At (*g*) is shown a characteristic scroll ornament from the Choragic Monument of Lysicrates.

125. In Fig. 72 are shown vine-like scrolls and tendrils which sometimes were combined with acanthus-leaf foliage as at (*a*) and (*b*), with the human figure, as at (*c*), or with other natural forms,

as at (*d*). Fig. 73 shows four examples in which individual ornaments are combined in *alternation*, that is, the two patterns are repeated alternately to vary the monotonous effect produced by the constant repetition of the same form. The use of *stelæ*, or vertical tablets of stone, as monuments to the dead, was common in all Greek countries. These memorials were often ornamented with carved central terminals and angle decorations similar in character to the seven examples illustrated in Fig. 74.

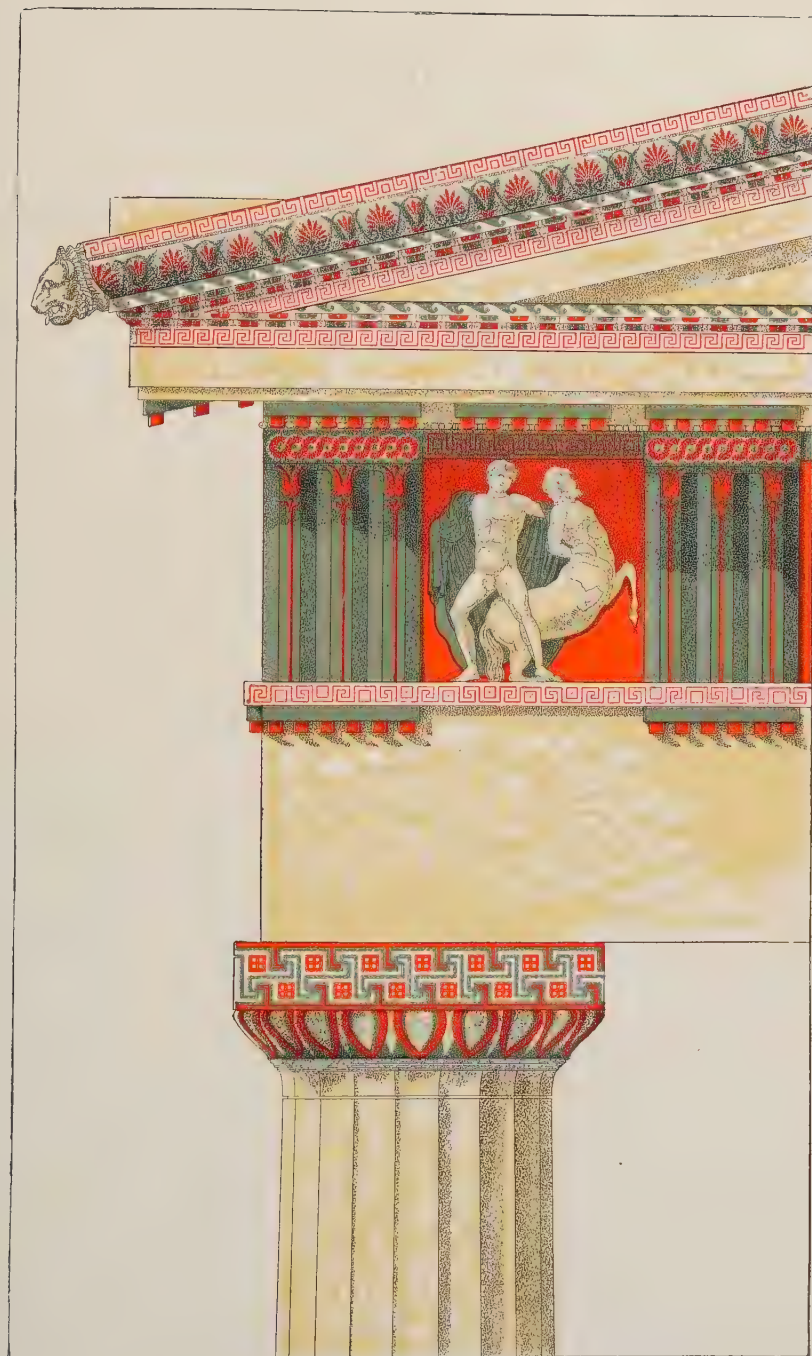
126. In Fig. 75 (*b*) and (*c*) are shown the conventional Egyptian lotus plant which, when developed, was transformed into the well-known decorative form, shown at (*a*), called the Greek lily.

The *anthemion* ornament, illustrated in Fig. 76 (*a*) and (*b*), formed the model for the *antefixæ*, or vertical decorative features, which were ranged above the eaves of the flank walls of a Greek temple, as shown in Fig. 48.

The examples of Greek ornamentation, shown in Fig. 77, are taken from painted vases. In (*a*) the honeysuckle ornament, in alternation with the conventional lily, produces an effective narrow enrichment. Flowing patterns for borders are illustrated at (*b*) and (*c*), and the rosette and fret forms of ornament at (*d*), (*e*), and (*f*). The wave, or meander, border is illustrated at (*g*).

127. A painted stela head is shown at (*a*), Fig. 78, and coloured borders, in which the honeysuckle design is introduced, at (*b*) and (*f*). Ceiling ornamentations, from the Parthenon, are illustrated by (*c*) and (*d*), and colour enrichment, applied to a carved torus moulding, by (*e*).

128. It was customary to decorate the mouldings of Greek temples, but while in the Ionic order the ornamentation was delicately carved in low relief, as shown in Fig. 79, in the Doric order the effect was obtained by merely painting the surface of the marble it was desired to enrich, as illustrated by means of Fig. 80. Except as a relief to the upper torus of the Attic base, which consisted of an upper and lower torus, a scotia and intervening fillets, the *guilloché*, or interlaced ornamentation, carved on the upper torus, Fig. 79, was seldom used. The details of



the Ionic order were treated with great freedom and variety although, unlike those of Doric buildings, the pediments were not adorned with groups of sculpture.

Fig. 79 illustrates the rich nature of the carved decorations sometimes applied to this order, as seen in the anthemion or honeysuckle ornaments of the necking *i* and the lofty cymatium *j*, in the leaves and darts of the cyma-reversa mouldings at *a*, *b*, and *c*, and in the eggs and darts in the ovolo *g*, and in the abacus and lower moulding *h* of the capital. Small enriched heads, such as those at *e*, *d*, *f*, and *h*, are common features of this order, but the guilloche *k* and *l* was seldom used.

ROMAN ARCHITECTURE

NOTES ON ROME

GEOGRAPHICAL, HISTORICAL, AND SOCIOLOGICAL

129. Geographical.—Early civilization was mainly congregated round the shores of the centrally placed Mediterranean Sea. Here Egyptians, Phœnicians, Greeks, Etruscans, and Carthaginians successively rose to power, ruled, and sank into decay ; and here, at a later date, Italy, the last of the great nations of ancient history, governed the civilized world. As seen from Fig. 81, the Italian peninsula is separated from the mainland of Europe by the lofty Alpine mountains. At the point where the western Alps terminate, the ranges of the Apennine mountains commence, and continue along the whole length of the peninsula. Italy is thus divided into two well-defined parts, namely, the broad, level country of the north, situated between these two great mountain ranges, and the comparatively narrow land traversed by the Apennines and bounded by the Mediterranean and Adriatic seas. The first is a very fertile plain ; the second, generally a mountainous country, has the rivers Arno and Tiber and the plains of Etruria, Latium, and Campania on its western side.

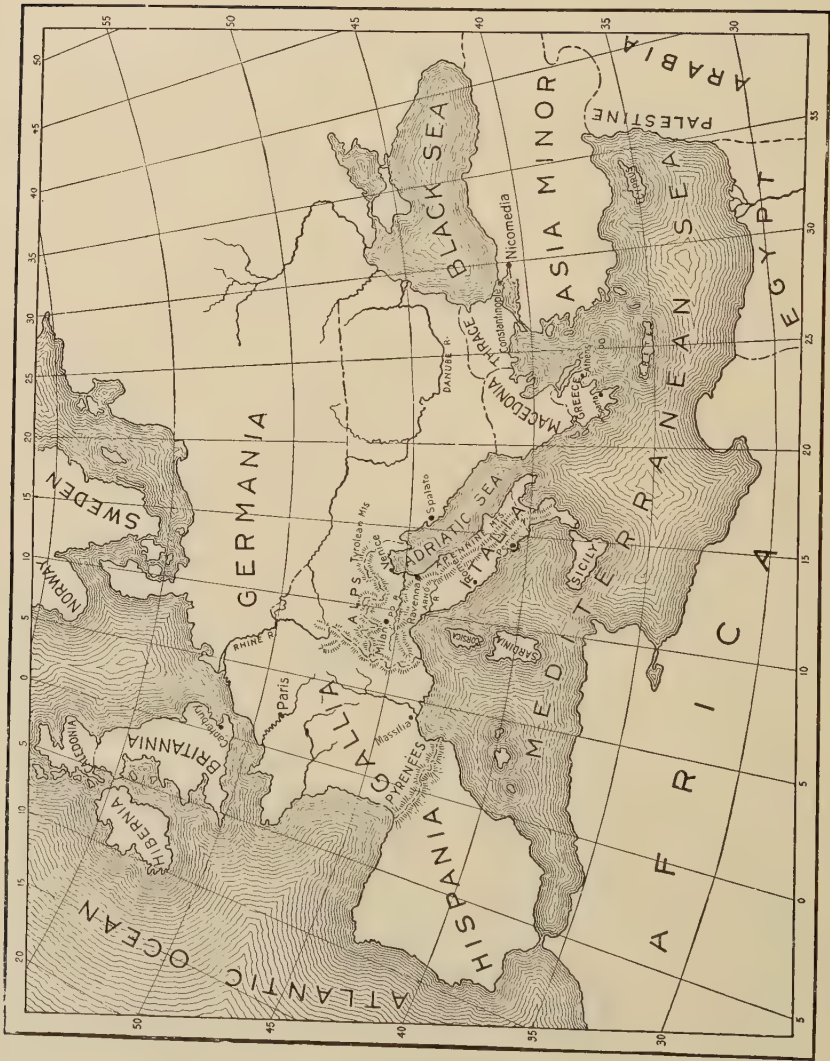


Fig. 81

130. Geological.—Many of the plains consist of alluvial and marine deposits curiously intermixed with hills and ridges of *tufa* which is a conglomerate of ashes and sand thrown out by a number of extinct volcanoes. Hard limestone rocks abound and building stone and marble are plentiful.

131. Climate.—The difference between the temperatures of northern and southern Italy is very considerable; the great plains of the former are chilled by cold winds from the snow-clad Alps, while the Apennines intercept the warm winds of the Mediterranean coast. The climate of southern Italy is therefore warm and pleasant and, in many respects, similar to that of the southern provinces of Spain.

132. Religion.—The greater gods and goddesses of the pantheistic Roman religion were personifications of the forces and phenomena of nature. Thus, Jupiter was the God of Light; Juno and Diana lunar deities; and Vesta the Goddess of Fire. Other deities, including gods of the soil and agriculture, were honoured by the Romans and had their special festivals.

133. Historical.—The first inhabitants of Italy belong to an era which long antedates history, but it is tolerably certain that at some remote period the country passed into the hands of the Pelasgians, to whose influence are probably due various affinities in the languages and mythologies of Greece and Rome. Next came the Etruscan dominion, with its progressive civilization, and afterwards, on the dismemberment of this once powerful empire, the Latins seized the opportunity of throwing off the yoke of Etruria and Rome first aspired to foreign conquest. According to tradition, an elective monarchy was founded at Rome as early as 750 B.C., and lasted until the expulsion of the seventh king, Tarquinius Superbus, 240 years later, when a republic was established. Toward the close of the fifth century B.C. the Roman Republic commenced the subjection of the neighbouring Etruscan cities; but a career of conquest was cut short by the sudden inroad of the Celts, or Gauls, who, descending the valley of the Tiber, captured and burned Rome in 390 B.C. Recovering her former position, after a series of arduous struggles

with the neighbouring powers which were then dominant in central and southern Italy, Rome finally broke up the confederacy existing between the states and, as the result of her successes in the third Samnite war, became supreme in 290 B.C.

134. The complete subjection of Italy, however, was postponed by the invasion of Pyrrhus, king of Epirus, who was finally defeated at Beneventum in 276 B.C., and it was not until eleven years later that Rome became absolute mistress of the whole peninsula. Roman colonies were then established in all parts of the country and formed a series of garrisons, which assisted in spreading Roman civilization and enabled the mother country to retain her conquests. But the rise of Rome, the growth of her naval power, and above all, her proximity to Sicily, excited the fear and jealousy of Carthage, and led to the protracted struggle between the two nations, known as the Punic wars. As the result of the second Punic war Sicily was annexed by Rome, and Carthage, surrendering her navy, her Spanish possessions, and her islands in the Mediterranean, became in 201 B.C. a dependent ally of Rome.

The close of the second Punic war left Rome without a rival in the western Mediterranean, but the east offered an unlimited field for conquest, and a struggle with Macedonia ensued. During this war, in which Hellenic independence was destroyed, Achæa and Macedonia became Roman provinces. In addition to the Grecian conquests the year 146 B.C. is also notable for the utter destruction of Carthage by the aggressive Romans. Southern Gaul was conquered in 121 B.C. and many Roman colonies were founded.

135. In the year 60 B.C., three prominent political leaders, Pompey, Crassus, and Julius Cæsar, formed a coalition against the Roman Senate and constituted what eventually came to be known as the First Triumvirate. But dissensions ensued, and ultimately Cæsar, who on account of his brilliant victories had obtained great influence with the army, triumphed over his colleagues, assumed the title of Dictator, and, in everything but name, became Emperor of Rome. The conspiracy which ended his life in 44 B.C. was brought about by his ambition, which led

him to intrigue for an assured royal position and thus to provoke an outbreak of the old republican spirit in Rome. After the death of Julius Cæsar a self-constituted Commission of three men, Marc Antony, Lepidus, and Octavius, the great nephew of Julius Cæsar, ruled the state conjointly. Through subsequent disagreements Lepidus lost his place in the triumvirate and Octavius, defeating Antony, who had retired to Egypt, annexed that country and became sole master of the Roman world in 30 B.C.

Although Octavius, known as Augustus Cæsar, made no attempt to define his position by an outward semblance of royalty, yet his appointments as chief of the Senate, proconsul, tribune, censor, supreme pontiff, and commander-in-chief of the army were sufficiently comprehensive to place absolute power in his hands.

136. Between the years 16 B.C. and A.D. 9 the frontier of the Roman Empire was extended from the Alps and Balkans to the Danube, the entire country south of the great river of central Europe being added to the empire. During the reign of Claudius, A.D. 41 to 54, Mauretania, Lycia, Judæa, and Thrace were changed from dependencies into Roman provinces and Britain was partially conquered. Vespasian, A.D. 69 to 79, conquered Jerusalem and advanced the Roman frontier in Britain.

Septimius Severus extended in the years A.D. 193 to 211 the limits of the empire in Britain, defeated the Parthians, took Ctesiphon, and made Assyria a Roman dependency. The great event of the reign of Decius was the first appearance of the Goths, in A.D. 249, who invaded Dacia, crossed the Danube, and ravaged Moesia and Thrace. During the reigns of Valerian and of his son Gallienus, in A.D. 253 to 268, great misfortunes befell the Roman Empire and its dissolution appeared imminent. The Franks and the Alemanni threatened Gaul and Germany; the Goths, obtaining command of the sea, plundered the maritime Roman provinces; and the Persians overran Syria, Cilicia, and Cappadocia. But, under the five warlike monarchs who reigned from A.D. 268 to 283, Rome recovered much of her power.

137. Constantine the Great, who reigned between the years A.D. 324 and 337, founded Constantinople, which city subsequently became the seat of government, and adopted Christianity

as the state religion. A formal division of the empire was made on the death of Theodosius, in A.D. 395, his sons dividing the empire by an arrangement under which Honorius received the western empire and reigned at Rome, while Arcadius governed the eastern empire from Constantinople. During the reign of Honorius, in A.D. 395 to 423, Italy was invaded from the north-east by Alaric, King of the Goths, who ravaged it and captured and sacked Rome, and from the north-west by the Vandals under Rhadagaisus. An invasion of Roman Gaul, by Attila, King of the Huns, was beaten back at Chalons, A.D. 451, but the western empire was then rapidly approaching its fall, which in consequence of barbarian invasions occurred in A.D. 476.

138. In the early days of the empire, Rome ceased to be merely the capital of the Italian state, but became the metropolis of the world. Under Augustus, during the years 30 B.C. to A.D. 14, many years of peace followed centuries of desperate conflict, and as the result of final victory the treasures of Carthage, Syria, Gaul, and other conquered lands flowed freely into Rome. Unlike their republican forefathers, who had held gold and luxury in contempt, the consuls and members of the civil administration displayed the most shameful cupidity in their treatment of the conquered provinces and, owing largely to official rapacity, the wealth of Rome soon became proverbial. Magnificent baths, immense gardens, and palatial villas increased in number and the city was flooded by a tide of Oriental luxury, that all parts of the community quickly learnt to appreciate.

139. The constant and free communication with Greece, consequent on the Roman conquest, had filled Rome with Greek artists and philosophers; and Greek forms and Greek ideas, including the introduction of Hellenic deities in place of the ancient national gods, were as instrumental in developing Latin literature as were the luxury and effeminacy of the Greeks in undermining the old stern Roman habits of business and the discharge of public duties. The slopes and summits of the famous hills of Rome were covered with the palaces and mansions of the wealthy citizens, and houses, many stories in height, were common in the narrow ways and roads of the city proper. Marble

came into general use as a building material in the early days of the empire and Augustus did his best to beautify Rome, not only by his personal liberality in erecting public buildings, but by persuading other rich citizens to follow his example.

While the projecting wooden fronts of the older domestic buildings still overhung the narrow streets, the newer quarters of the city were laid out with wider thoroughfares and lower houses in the Grecian fashion. Owing to Greek influence, art developed under Augustus with wonderful rapidity, and was at its best up to the second half of the second century A.D. The time of Severus and his sons was the only period in the whole history of Rome at all comparable, in its architectural activity, with that of Augustus. Then, however, although Rome was richer than ever and endless varieties of costly marbles and alabasters were obtainable, yet the decay of Roman art had commenced, and the ornate and costly buildings of the later period were no match, either in beauty of design or delicacy of workmanship, with those of the polished and refined Hellenized age of Augustus and his immediate successors.

CHARACTERISTICS OF ROMAN ARCHITECTURE

VAULT CONSTRUCTION, COMBINATION OF ORDERS

140. Arched-Roof Construction.—Etruscan art, which in the early days of Rome had exercised great influence on the architecture of the city, was gradually superseded by Greek forms and methods of building. But the arch construction of the Etruscans was never forgotten or laid aside, and its application to the covering of large spaces was developed by Roman architects and eventually brought to a high state of perfection, notably

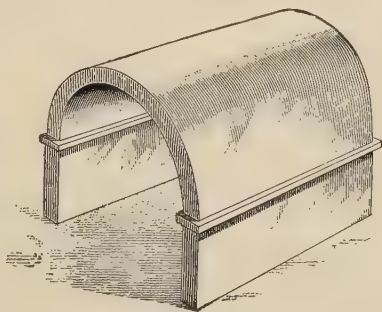


FIG. 82

in aqueducts and bridges, the arches of which were often of immense span and height. The free use of this great structural principle led to the adoption of the arch *form*, and its form only,

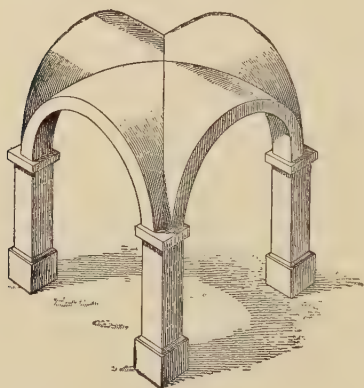


FIG. 83

in building great roofs and domes, such as those that spanned the large halls of the *thermæ*, or public baths, and other buildings. To the earliest and simplest form of vault known as the *barrel*, or *wagon-headed vault*, Fig. 82, which is simply a continuous arched ceiling springing from two parallel walls, as shown in Fig. 83, the Romans added a cross-vault, built at right angles to the first one, cutting away

the side walls to the extent of the span of the second opening, and concentrating the weight of the whole structure upon solid piers of concrete, brickwork, or masonry.

141. Dome Construction.—The development of this system of roofing led to the introduction of a series of cross-vaults placed side by side and carried by widely spaced piers, which left the maximum amount of floor space in the halls or large rooms to which this form of roofing was applied. An example of this is seen in the basilica of Maxentius, Fig. 102. Pumice-stone concrete, which was selected on account of its extreme lightness, was used in the construction of these vaults, which were cast in one solid mass and had therefore no lateral thrust. In the building of domes the same principle of construction, namely, the avoidance of lateral thrust, was adopted, and by the use of a strong natural cement, known as *pozzuolana*, the Romans were able to construct immense concrete domes the superincumbent weight of which was carried by walls, or piers, of great thickness. For example, the concrete walls of the great rotunda, which support the dome of the Pantheon, Fig. 90, are nearly 20 feet in thickness.

142. Combinations of Orders.—To Greek influence, more especially after the conquest of Greece in the middle of the second century B.C., the more refined elements of Roman art may justly be ascribed. But while they adopted the Doric, Ionic, and Corinthian orders of the Greeks, the Romans added two styles, one of which, the *Composite*, was peculiar to their own country, and the other, the *Tuscan*, was borrowed from the Etruscans. As Roman buildings were often carried to so great a height as to render the use of a single column impossible, it became customary to place separate orders, with their entablatures, in the successive stories of the structure to which they were attached, and this arrangement of order over order created a marked divergence between the columnar architecture of Greece and that of Rome. An early example of this construction is shown in Fig. 84, which illustrates a portion of the theatre of Marcellus at Rome.



FIG. 84

Magnificence of conception, scientific construction, and sound and careful planning are apparent in Roman architecture, but the subtle artistic perception, which enabled the Greeks to accept only that which is best in art, was not general among the art workers of Rome.

EXAMPLES OF ROMAN ARCHITECTURE

PUBLIC BUILDINGS, HOUSES, AND MONUMENTS

143. Fora.—The *forum*, an open space used for political meetings, judicial proceedings, and traffic, was an important feature in a Roman city or town. In Rome the oldest forum, the Forum Romanum, consisted of a large and irregular four-sided space

lying between the Capitol and the Palatine Hill, and was surrounded by temples, basilicas, and other public buildings.



FIG. 85. TEMPLE OF FORTUNA VIRILIS, ROME

Originally intended for a market place, the Forum Romanum subsequently became the place of meeting for the transaction of general or private business, but shops and stalls were ranged

along its northern and southern sides. The forum was divided into the *comitium*, containing the *rostra*, or platform for the use of speakers, and the *forum* proper. Under the empire several fora, enclosed by colonnades and having temples in their midst, were erected in the neighbourhood of the old meeting place of the Roman citizens.

144. Temples.—Although, in the main, the various forms of Grecian temples were imitated by the Romans, yet certain marked differences are to be found between the religious buildings of ancient Greece and Rome. For example, the external colonnade never entirely surrounded the rectangular temples of the Romans, but the detached order used for the portico was often continued along the blank walls of the cella, in the form of attached three-quarter columns, as seen in Figs. 85 and 86. Etruscan influence found expression in the shortened proportions of the Roman temple, and the great temple on the Capitol, with its three cellæ, was built in the Etruscan style. When, under Greek influence, Greek temples began to be copied at Rome, the prostylos was the type of plan usually chosen, and although in many instances the Greek form of roof was used, an important change was eventually brought about by the introduction of cylindrical vaulting and the dome.

145. The small Ionic temple of Fortuna Virilis, which is a good example of a rectangular Roman temple, Fig. 85, consists of a cella and a pronaos, or portico. In this, as in other Roman temples, the broad wing walls, or pedestals, which flank the front steps are continued round the building in the form of a basement, or *podium*. Fig. 86 illustrates the Roman Corinthian temple at Nîmes, France, built during the reign of Hadrian, which is an excellent example of a pseudo-peripteral temple.

The octastyle Corinthian temple of Minerva Chalcidica was one of the finest buildings in Rome. Of the Corinthian temple, erected at the foot of the Capitol by Vespasian, and known as the temple of *Jupiter Tonans*, only three columns are left. They belonged to a hexastyle peripteral building, about 85 feet long and 70 feet wide. The temple of *Mars Ultor*, the cella of which terminated in an apse, was erected by Augustus; that of

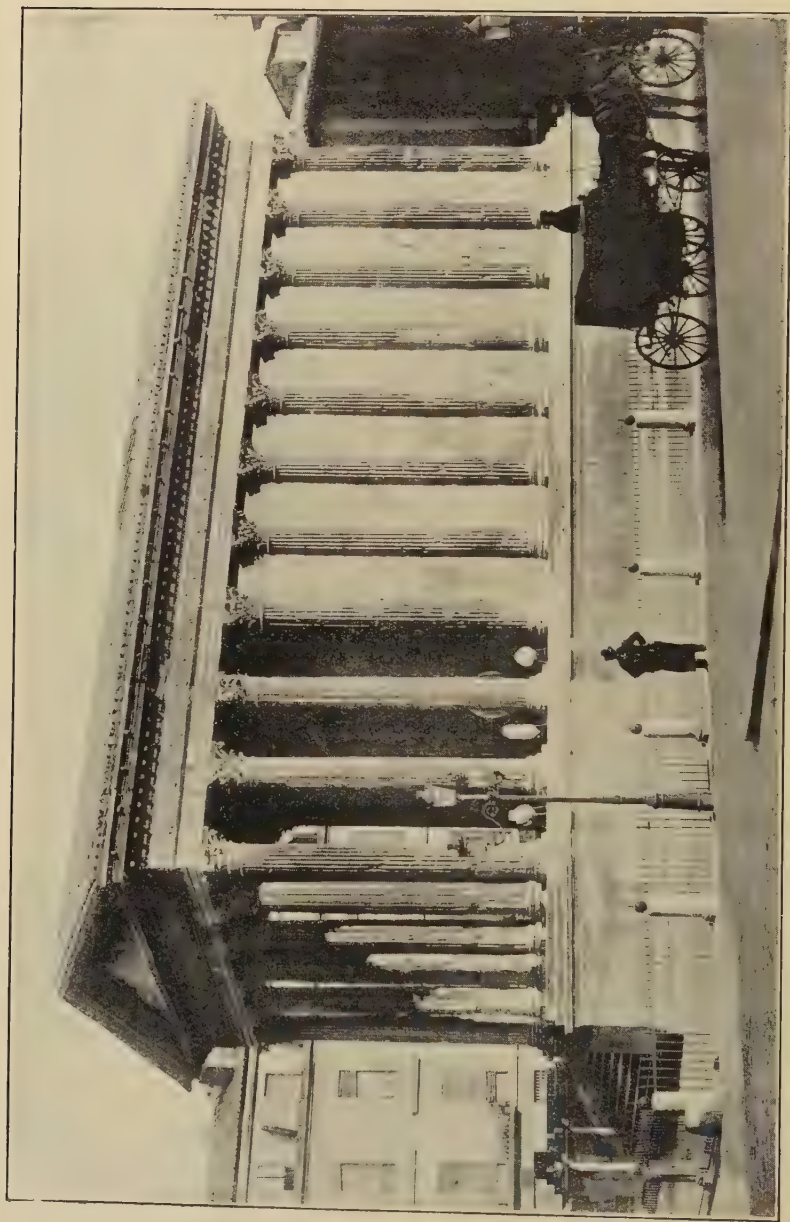


FIG. 86. ROMAN CORINTHIAN TEMPLE AT NÎMES, FRANCE

Antoninus and Faustina, a building of a much later period, is a good example of a pseudo-peripteral temple. Two circular temples—that of Vesta at Tivoli and that of Mater Matuta at Rome—have an external peristyle of Corinthian columns. The latter of the two is shown in Fig. 87.

146. The magnificent temple at Rome, known as the *Pantheon*, of which Figs. 88 and 89 are external and internal views,



FIG. 87. TEMPLE OF MATER MATUTA, ROME

was built in 27 B.C. by Agrippa. As seen more clearly from the plan, Fig. 90, and the sectional elevation, Fig. 91, it consists of a large circular cella and a front portico of sixteen Corinthian columns. The internal diameter of the Pantheon is 142 feet 6 inches and its height, from the pavement to the top of the dome, is equal to its diameter. Internally, the cupola is divided into deeply sunk square coffers; externally, the dome is not now an important feature of the external design but when first erected it must have resembled a mound of shining gold, as



FIG. 88. THE PANTHEON, ROME

it was then covered with tiles of gilt bronze. These plated tiles were stripped off in A.D. 663 by the Emperor Constans II. The present lead covering was put on in 1454. Internally, the effect of the dome, with its single central hypæthral opening, 27 feet in diameter, forming a frame to the blue sky beyond, makes it unlike any other temple in the world, and even now, although stripped of its marble linings, it is still one of the most stately of buildings. When first built, the Pantheon was a completely



FIG. 89. INTERIOR OF THE PANTHEON, ROME

isolated structure, the walls which now connect it with the baths of Agrippa being later additions.

147. Public Baths.—The public baths, or *thermæ*, of the Romans combined the arrangements of a Greek gymnasium with warm baths of all kinds, and included open and covered colonnades for conversation, instruction, and different exercises. Of the existing remains of *thermæ* in Rome, those of Caracalla and Diocletian are the most extensive. The baths of Caracalla are said to have been commenced in the lifetime of Severus, partially completed during the reign of his son and successor Caracalla,

and finished by Heliogabalus and Severus Alexander during the years A.D. 218 to 235. Restored by Theodoric about A.D. 500, the remains of these baths are of great instructive value, as illustrating the methods of construction employed by Roman architects of the period to which the buildings belong.

148. The whole of the buildings, including the *peribolus*, or outer colonnade, of the baths of Caracalla were raised on a platform some 20 feet in height, under which a number of

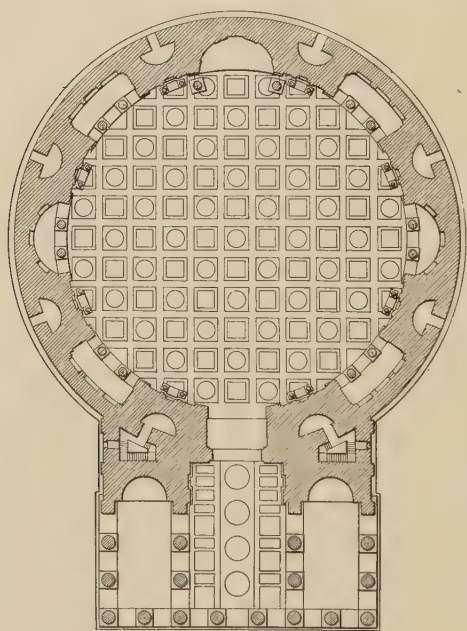


FIG. 90. PLAN OF THE PANTHEON, ROME

vaulted chambers, for the use of the attendants and for general storage purposes, were arranged. In addition, a considerable portion of this basement was set aside for the furnaces by which the hot rooms and bathing places were heated.

The main building of the baths of Caracalla is shown in plan in Fig. 92, and the uses of the chief rooms have been determined by excavations made in recent years. In the centre of the north-east side

was the *frigidarium*, or cooling room, *a*, containing the *natatio*, or swimming bath. It had vestibules at each end which led to the outer court. The *tepidarium*, or first hot room, *b*, a large and magnificent hall, was in the centre of the building, and its vaulted recesses in the side walls contained marble-lined baths and opened one into the *frigidarium* and the other into the *sudatorium*, or sweating room, *d*. Large end vestibules were separated by columns and screens from the main *tepidarium*,

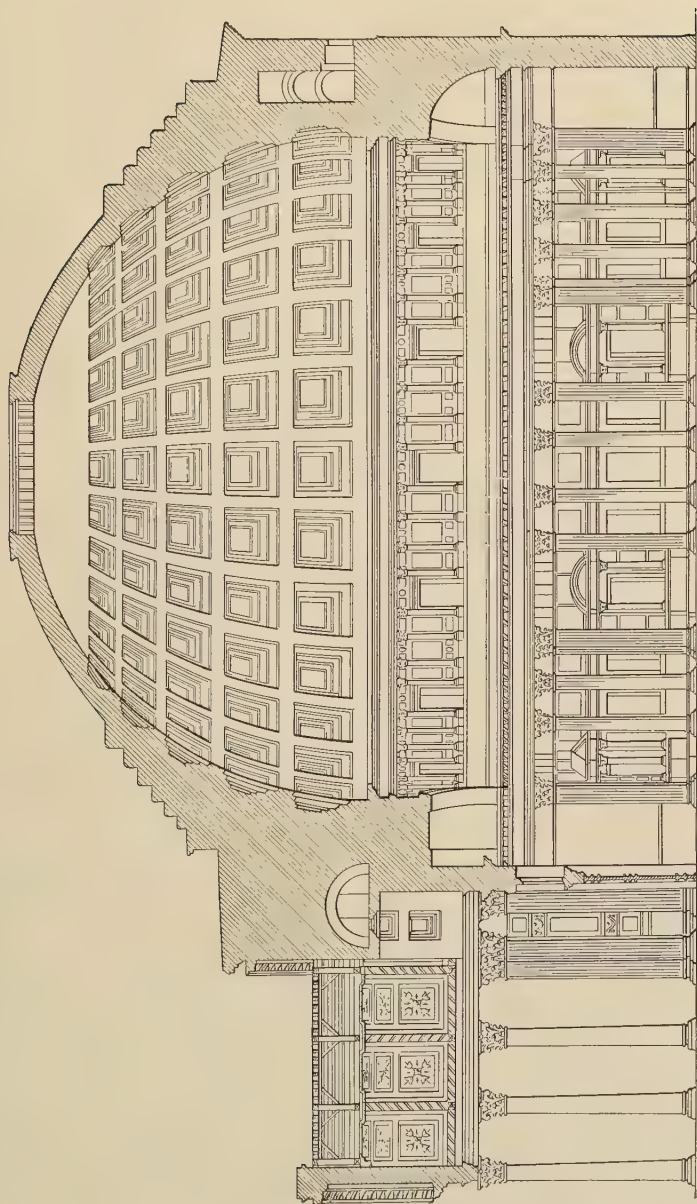


FIG. 91. SECTIONAL ELEVATION OF THE PANTHEON, ROME

which was 170 feet long by 80 feet wide. The latter had a groined roof springing from granite columns, surmounted by short pieces of entablature, in the debased style of the second and third centuries A.D. Short columns on each side were set in front of the recesses containing the warm baths. The next room *d* was part of the sudatorium and formed a vestibule to the circular hall beyond. It had a *hypocaust* floor, one constructed to conduct, or retain, hot air, and its walls were lined with flue tiles. The same form of construction was adopted for the great circular hall *c*, which was covered by a lofty dome and formed the *laconicum*, or vapour bath. Lofty chambers *e*, placed on each

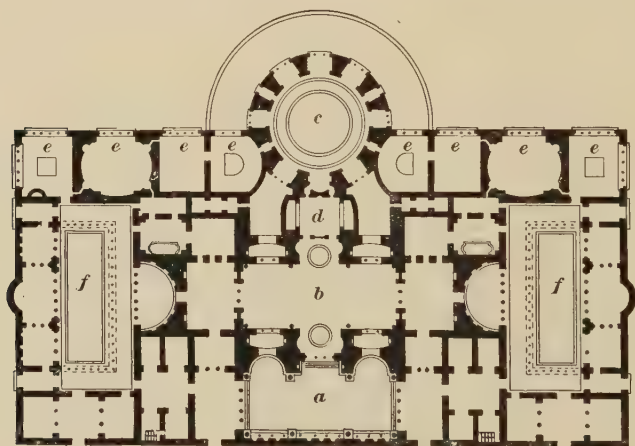


FIG. 92. PLAN OF THE BATHS OF CARACALLA, ROME

side of the circular hall, were open to the surrounding gardens and courts. The columns of the two large peristyles *f* supported vaulted galleries.

149. Although it is possible to identify the chief rooms of these enormous baths, there are still many apartments which might have formed suites of private baths, or dressing and anointing rooms, but the exact use of which cannot be traced. The outer enclosure, 1,200 feet square, was planted with flowers and shrubs and surrounded by a long line of buildings of the time of Heliogabalus and Severus Alexander. The outer buildings of the north-east side consisted of small vaulted chambers,

two stories in height, with staircases at intervals. The use of these rooms has not been definitely ascertained; possibly they were shops, or perhaps baths and dressing-rooms for the use of persons who did not care to bathe in public. In front was a long colonnade in the centre of which was the main entrance of the baths from the Via Appia. The halls on the other sides of the *peribolus*, or enclosure, were arranged as meeting-rooms for philosophers and literary men and their pupils, or as apartments for exercise and games. Tiers of marble seats surrounded the spacious *stadium*, or foot-race course, of the gymnasium, behind which were reservoirs, consisting of sixty-four small vaulted chambers supplied by an aqueduct with the water required for the baths.

150. The baths of Diocletian were commenced by Maximianus, in A.D. 302, in honour of his brother emperor, Diocletian, who was then absent from Rome. Tradition records that a large number of Christians, who were afterwards martyred, were forced to work in the erection of these baths, which in their general arrangement and methods of construction were similar to the baths of Caracalla.

151. Theatres.—The plan of a Roman theatre resembled that of a Greek one, although there were several minor differences. For instance, the stage of the Roman theatre was brought nearer to the audience because the circumscribing wall of the auditorium formed only a semicircle with the front wall of the stage building, whereas the boundary of the auditorium of a Greek theatre exceeded a semicircle. A covered colonnade, the roof of which was level with that of the stage, occupied the highest tier of the auditorium. Two balconies, placed right and left of the stage and over the entrance to the orchestra, were reserved the one for the use of the emperor and the giver of the entertainment, and the other for the empress and Vestal virgins. Places of dignity were also assigned to magistrates and priests, and, after 68 B.C., the first fourteen rows of the ordinary seats were appropriated to the *equites*, or knights. Admission was free, as was commonly the case in all the numerous entertainments provided for the people in the days of the Roman Empire.

152. The theatre of Marcellus at Rome, shown in its present state in Fig. 93, was commenced by Julius Cæsar and finished in 13 B.C. by Augustus, who dedicated it in the name of his nephew,

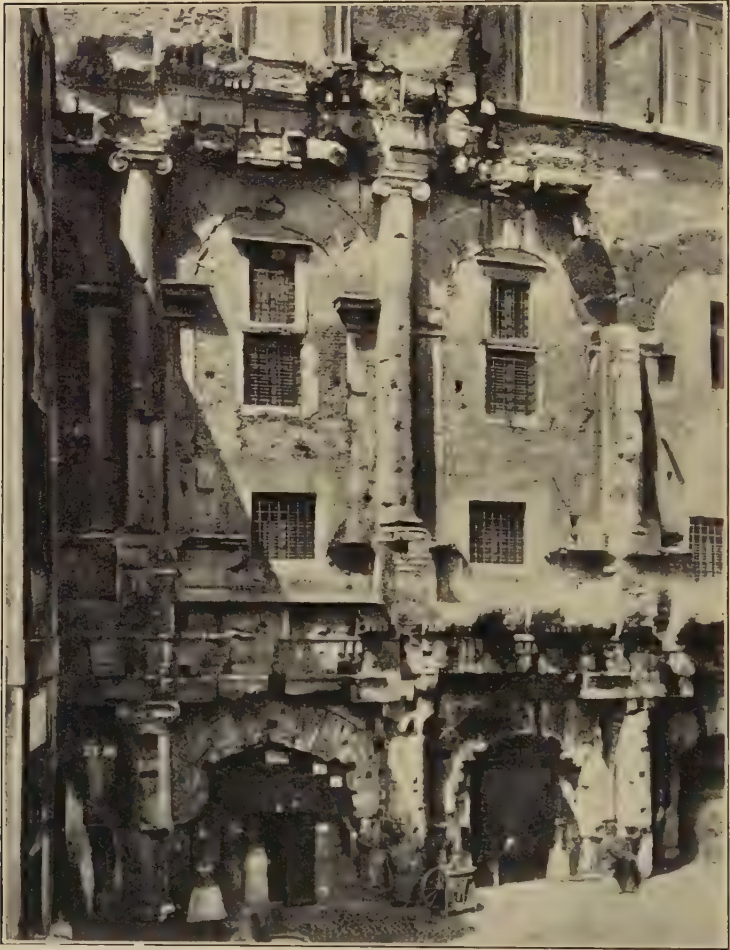


FIG. 93. THEATRE OF MARCELLUS, ROME

Marcellus, the son of Octavia. The existing remains are of great beauty and interest. A large portion of the arcading of the curved exterior is still standing, but the lower story is half buried

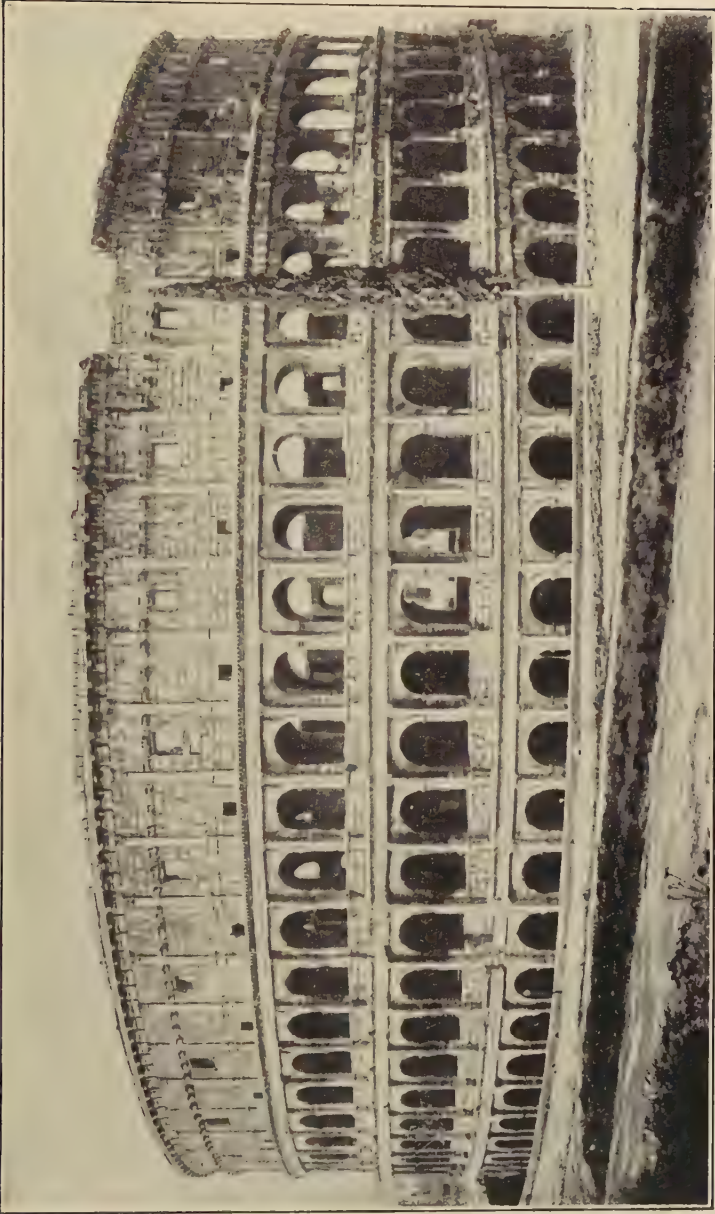


FIG. 94. THE COLOSSEUM, ROME

beneath the present ground level, as shown in the view. Externally the design consists of arcades with columns partially embedded in the wall and entablatures at each story. The lower order is Doric or Tuscan and the upper order Ionic. The materials used are *travertine*, a porous, light-yellow rock, covered with fine white stucco of pounded marble. All the details are carefully designed and appropriate to the positions they occupy in the structure.

153. Amphitheatres.—The class of buildings known as **amphitheatres**, which are said to be of Etruscan origin, were erected in almost all the important towns of the Roman empire. An amphitheatre contained a vast open space, elliptic in form, set aside for the performers and known as the *arena*, which was surrounded by a lofty structure provided with raised seats for the spectators and double corridors and staircases for ready access and egress to and from all parts of the building. Primarily designed for the combats of gladiators, and for spectacular fights between wild beasts, the arena was occasionally flooded with water and became the scene of naval engagements in which mimic vessels fought with each other. The spectators' seats rose from the surrounding wall of the sunk *arena* in graduated concentric tiers, the lower stages being reserved for the senators, the magistrates, and other persons of importance, while special seats were provided for the emperor and his suite, and for the person who paid for the performance. Remains of Roman amphitheatres are to be seen at Verona, Pompeii, Pæstum, Capua, and other parts of Italy, and at Nîmes, Arles, Frejus, and elsewhere in France ; but the most famous of these ancient structures is that known as the Colosseum at Rome.

154. Commenced by Vespasian in A.D. 72 and completed by Domitian, the Colosseum, or *Amphitheatrum Flavium*, shown in Fig. 94, was the scene of gladiatorial conflicts for nearly 400 years. Externally, the façade comprised a lofty building of four stories separated by entablatures continued in unbroken lines round the whole building. Attached columns of the Tuscan, Ionic, and Corinthian order adorned the arcaded openings of the three lower stories. The fourth story consisted of a nearly solid

wall, enriched by pilasters with Corinthian capitals and surmounted by a heavy cornice. Eighty openings, for entrance and egress, were arranged in the arcade which surrounded the ground floor of the building and contained numerous staircases leading to the spectators' seats. Immense crowds of people could thus enter or leave the building, which is said to have accommodated about 80,000 persons, with little or no confusion. The length of the major axis of the Colosseum from out to out, was 607 feet, the minor axis 506 feet; the outer wall was about 170 feet in height. Projecting stones, or corbels, are still to be seen at the top of the Colosseum and other amphitheatres. These stones carried a series of masts or poles to support the vast expanse of canvas, known as the *velarium*, which protected the spectators from the heat of the sun.

155. Circuses.—In addition to theatrical performances and gladiatorial displays, chariot races were extremely popular with the Roman people, and led to the construction of various circuses

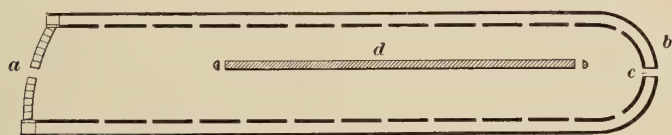


FIG. 95. PLAN OF CIRCUS OF ROMULUS, ROME

in Rome and other parts of the empire. One of these, known as the circus of Romulus, is shown in plan in Fig. 95.

The circus, oblong in its general form, was rounded at the end *b* opposite the starting point of the races, at *a*. Small arched chambers, called *carceres*, from which the chariots started flanked the entrance and a low wall *d*, called the *spina*, round which the chariots ran, divided the course longitudinally and formed the tracks. The *Porta Triumphalis*, at *c*, by which the conqueror of the games left the circus, is supposed to have stood in the centre of the curved end of the structure. Seats were arranged round the performers' area in the same manner as in the amphitheatres. The Circus Maximus, the largest at Rome, was built in the reign of Tarquinius Priscus, enlarged by Cæsar, and embellished by Augustus and Tiberius. It was over 2,000 feet long and 400 feet

wide, and is said to have provided seating accommodation for 150,000 people.

156. Triumphal Arches.—These commemorative monuments, erected in honour of victorious emperors or generals, were usually placed across the roadway along which the triumphal procession



FIG. 96. THE ARCH OF TITUS, ROME

passed on its way to the capitol. The earlier structures, such as the arch of Titus, Fig. 96, consisted of a single opening decorated with attached columns and finished by an entablature and a lofty attic. Later triumphal arches comprised small subsidiary archways, placed on either side of the main opening, as seen in the arch of Constantine at Rome, Fig. 97. This, the largest and

most imposing of the arches of Rome, stands at the foot of the Palatine Hill, near the Colosseum, and was built in the road known as Via Triumphalis. It is ornamented with eight detached Corinthian columns surmounted by statues. The bas-reliefs with which this archway is decorated are supposed to have been taken from an arch erected to Trajan.

157. Monumental Columns.—The monumental columns of large proportions, erected in honour of military successes, were



FIG. 97. THE ARCH OF CONSTANTINE, ROME

usually surmounted by colossal statues. Trajan's Column, Fig. 98, erected in A.D. 114, in his forum at Rome, was dedicated to that emperor by the Roman Senate and people to commemorate his Dacian conquests. The column is of the Doric order, about 12 feet in diameter. It consists of thirty-four blocks of Carrara marble round which are coiled bands of sculpture in low relief, illustrating Trajan's campaigns against the Dacians. A colossal bronze statue of the emperor formerly surmounted the capital. The balcony, near the top, can be reached by an

internal spiral staircase, the column being provided at intervals with openings, to admit light and air. Entrance to the staircase is through a door in the square pedestal. The pedestal carrying the column is decorated with reliefs of arms and trophies and by a tablet with a dedicatory inscription. Beneath it is the door-way leading to the internal spiral staircase.

Fig. 99 (*a*) shows the plan of the column and the spiral stair-case and (*b*) the plan of the pedestal. The total height of this monument, including the pedestal and the statue, was about 140 feet.



FIG. 98. TRAJAN'S COLUMN

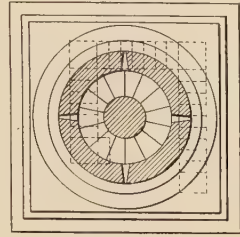
158. Tombs.—Roman tombs, of various forms, lined the sides of the high roads for some miles beyond the city gates. The best-preserved example is that of Cæcilia Metella, the wife of Crassus, which consists of a circular tower, Fig. 100, resting upon a quadrangular basement about 100 feet square.

The upper stage of the tower is faced with blocks of travertine and finished with a fine frieze and cornice. Originally the structure was crowned with a conical roof of stone or marble, but its upper portion was altered during the Middle Ages when the present battlements were added.

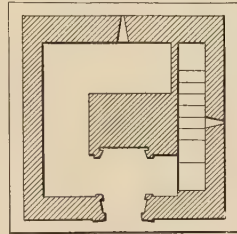
The tomb of Augustus was erected in the Campus Martius during the lifetime of the emperor and consisted of four cylindrical stages, which decreased in diameter as they ascended. It was built upon a substructure of white marble. The top stage

of this monument was surmounted by a colossal statue of the emperor.

159. Bridges and Aqueducts.—The application of the arch principle of construction enabled the Romans to build bridges and aqueducts of great beauty and solidity. Many fine examples of Roman bridge building were to be seen in various parts of the empire, and Trajan is said to have constructed one over the Danube which had a height of 150 feet, a width of 60 feet, and spans, from pier to pier, of 170 feet. The magnificent aqueducts, by means of which Rome and other cities of the empire were supplied with water, contained channels laid wherever possible with a regular declivity from the source of the water supply to its place of delivery ; the channels were carried through hills by



(a)



(b)

FIG. 99. PLANS OF TRAJAN'S COLUMN AND PEDESTAL



FIG. 100. TOMB OF CÆCILIA METELLA, ROME

means of subways, and over valleys on a substructure of huge piers and arches. At the end of the first century A.D. there were nine of these structures in Rome, of which the Aqua Claudia and the Anio Novus, which were respectively 46 and 59 miles in length, entered the city upon the same aqueduct, the conduits being arranged in two stages one above the other.

160. Basilicas.—Roman basilicas served the double purpose of halls of justice and of exchanges, or places of meeting for merchants. These buildings usually adjoined the forum or, where there was more than one, the principal forum of the city. At first the basilica consisted of a rectangular building, the width of which was not more than half nor less than one-third of its length; it was divided longitudinally, by rows of columns, into a central nave and two or four aisles. Upper galleries were sometimes constructed over the ends and aisles of the building. Many basilicas had a semicircular recess, or apse, formed at one end of the hall to receive the raised floor of the judges' *tribune*. The timber roofs were of simple construction, and generally the structures were plain and unpretentious. But later, under the empire, basilicas became much more palatial in appearance.

161. The remains of the basilica of Trajan have been discovered at Rome in the forum that bore his name. This building appears to have been 385 feet long and 180 feet wide. It had four rows of internal columns and two semicircular recesses for the judges' seats. In the plan of this building, Fig. 101, the adjoining quadrangle of the forum is shown at *a*. At *b* is the spacious nave with its double aisles *c*. The eastern tribune is at *d* and the western at *e*; the position of Trajan's column is indicated at *f*, the Greek library at *g*, and the Latin one at *h*.

An altogether different type of design is found in the basilica of Maxentius, Fig. 102; this basilica consisted of a spacious nave *a*, and aisles *b*, each divided by transverse buttress-walls into three large portions. At the western end was the main tribune *a'*, and there was a supplementary tribune at *b'*. The nave was roofed with a semicircular intersecting vault, having three large bays or divisions. The aisles were covered, at a lower

level, with semicircular vaults, 76 feet in span, formed at right angles to the axis of the nave; the vaulting of the latter, 83 feet in span, rose to a height of 120 feet from the floor. Many of the Roman basilicas were afterwards used as Christian churches and their salient features re-appeared in the ecclesiastical architecture of the early Christians.

162. Palaces.—The stately palaces, built on the Palatine Hill at Rome by successive Roman emperors, are now in so ruinous a condition that it is impossible to describe their architecture with any degree of accuracy. Probably, as was the case with the huge palace of Domitian, they contained, although on a far larger and more magnificent scale, all the essential elements of the Roman mansion. That is to say, the halls of audience and justice and the royal chapel were ranged round the front peristyle, and the state apartments and other rooms were grouped round large internal courts.

Among the remains of Domitian's palace that have been uncovered are those of the throne room, which was entered by a central portico in the front façade facing the ordinary approach to the Palatine Hill. The decoration of this hall was in keeping with its size. Around its walls, which were covered with costly

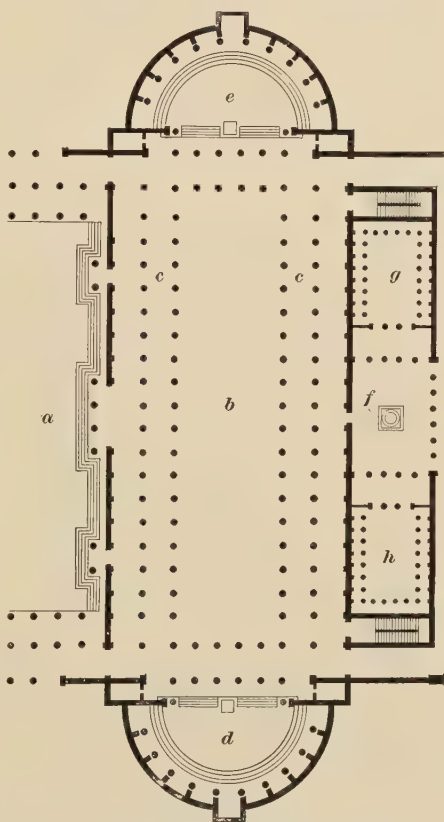


FIG. 101. · PLAN OF TRAJAN'S BASILICA, ROME

marbles, were sixteen Corinthian columns 28 feet in height; colossal statues filled the eight large niches which adorned the room. The threshold of the doorway was formed of an enormous slab of Greek marble, and fluted columns, of Carian marble, supported the roof of the peristyle.

163. Houses.—Private houses in Rome were of two kinds, known respectively as the *domus* and the *insula*. The former, a detached villa, or mansion, usually stood in the midst of a

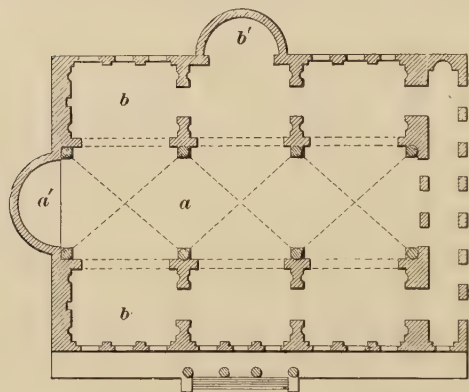


FIG. 102. PLAN OF THE BASILICA OF MAXENTIUS, ROME

spacious garden and was more or less secluded from the noise and turmoil of the busy streets; but the *insula*, frequently placed at the junction of two important thoroughfares, was situated in the very heart of city life. It consisted of a block of buildings, several stories in height, the

rooms of which were usually let in flats to tenants drawn from the poorer class of Roman citizens. If well placed for business purposes, the ground floor of the *insula* was usually divided into a number of small shops; these shops had no connection with the upper parts of the building, although one roof covered the whole. At the time of Augustus it was found necessary to limit the height of city buildings to 70 feet, a maximum which was afterwards reduced to 60 feet, and these structures, hitherto built of wood and sun-baked bricks, were thenceforth required to be carried on stone piers and to have walls of concrete or burnt bricks. In the reign of Nero a new and elaborate Building Act was drawn up under which fireproof materials, such as *peperino*, a stone of volcanic origin ranging from grey to black in colour, were to be used for the external walls of buildings. This Act also regulated the height

of houses and the thickness of walls, fixed the minimum width of streets, and contained many other* useful provisions.

164. Good examples of the domestic buildings of the Romans under the empire are to be seen in the remains of houses found in the disinterred city of Pompeii, which was destroyed in A.D. 79. In this interesting ruined city ancient Roman life is very fully illustrated, not only by the profusely adorned mansions of the rich citizens, but also by the humble dwellings of the poorer citizens. In addition, as an example of civic planning that is thoroughly typical of its time, Pompeii provides a good object-lesson for the student of Roman architecture.

165. Pompeii.—The streets of Pompeii, few of which exceeded 20 feet in width, were laid out with some regularity and paved with lava. They were lined, on both sides of the narrow footways, with small stalls or cells that served for shops. The fronts of these shops were merely large square-headed openings formed in stuccoed brick walls and possessed no architectural interest. As was customary in Roman towns, the principal buildings, devoted to justice, commerce, religion, and civic administration, were congregated round the two fora. The larger of these, known as the Greater Forum, was paved with slabs of white *travertine*, a porous rock, and surrounded by a two-storied arcade of Doric and Ionic columns, ornamented with statues of illustrious citizens. The temple of Jove, which occupied the northern end of the forum, was flanked on either side by triumphal arches. The basilica and other public buildings, including the *macellum*, or provision market, the *curia senatorum*, or meeting place of the town councillors, the temples of Apollo and Mercury, and the Exchange of Eumachia, were on the east and west sides. Of the triumphal arches, that on the east of the temple of Jove was dedicated to Nero and comprised a marble edifice containing niches for fountains and statues. It is uncertain to whom the western arch was dedicated. Northward of the temple of Jove the street of Mercury, the widest street in Pompeii, led from the forum to the city wall.

The temple of Fortune, the baths of the forum, and the arch of Caligula were in this street, which in many respects was one

of the most interesting in the city. The triangular-shaped forum in the south-east district of the city bore much the same relation to the second group of public buildings that the greater and older forum did to the first. It was situated close to the southern wall of the city and was approached through an Ionic portico adorned with busts of distinguished citizens. The forum was lined on its eastern and western sides by Doric colonnades, and the Doric temple of Hercules, the oldest and most magnificent building in the city, stood at its southern extremity. West of this temple stood a semicircular stone seat and a sundial on which was an inscription recording the names of those who had presented it to the city. Other public buildings in the neighbourhood of the triangular forum included the *ludus gladiatorius*, or fencing school, two theatres, the larger of which contained seating accommodation for 5,000 people, the Stabian baths, and the temples of Isis and Æsculapius. The amphitheatre adjoined the south-east junction of the city walls, which were pierced by eight gateways.

166. Pompeian Houses.—As to the domestic buildings of Pompeii, the street fronts of the dwelling house of a rich citizen, such as that belonging to the family of Pansa, were reserved for shops, between two of which a convenient space was left for the entrance to the house as shown in Fig. 103. This well-known house, which is a good example of the general arrangement of a town house at the time of the empire, will serve as an illustration for the following brief general description of Roman houses of that period. A Roman civic dwelling house included an inner quadrangular hall, or *atrium*, *b*, which was entered from the street through a small vestibule, the *ostium a*. As the most spacious and important apartment in the house, the atrium was always placed opposite the principal entrance. It was usually lighted by a large central aperture open to the sky, called the *compluvium*, through which rain fell into a sunk tank *c*, formed in the floor of the atrium and known as the *impluvium*. The atrium was the reception room of the house and, as such, was open to all members of the family, to friends, and casual visitors. Three rooms adjoined the lower end of the atrium of which the

central one, the *tablinum*, or muniment room, *d*, was flanked by small rooms *e* on either side known as *alæ*, or wings. The *tablinum*, which was completely open in front, contained the proofs of the rank of the family, its archives, and business documents; both the *tablinum* and the smaller *alæ* were ornamented with pedigrees attached to ancestral figures. The number of statues with which this part of the house was adorned often gave it the appearance of a miniature forum.

167. Small reception and service rooms *f* were ranged round the side walls of the central *atrium* from which they were lighted. Corridors *g*, called *fauces*, formed on either or both sides of the *tablinum*, led to an inner court *h* which was surrounded by columns and hence known as the *peristyle*. The *peristyle*, as its name and arrangement imply, was of Greek origin. More extensive than the *atrium*, its columns were connected by a low parapet which was sometimes hollowed out to contain earth for planting flowers. A *xystus*, or parterre, shaded by palm trees, surrounded the orna-

mental, deep, water basin, containing fish, set in the centre of the court. The *triclinium*, or dining-room, *i*, sleeping apartments *k*, living-room hall, or *æcus*, *l*, reception room, or *exedra*, *m*, kitchen *n*, and other rooms were built around the *peristyle*. From this, access was had through the vestibule *o* to a second garden *p* in which an external *triclinium* was often placed.

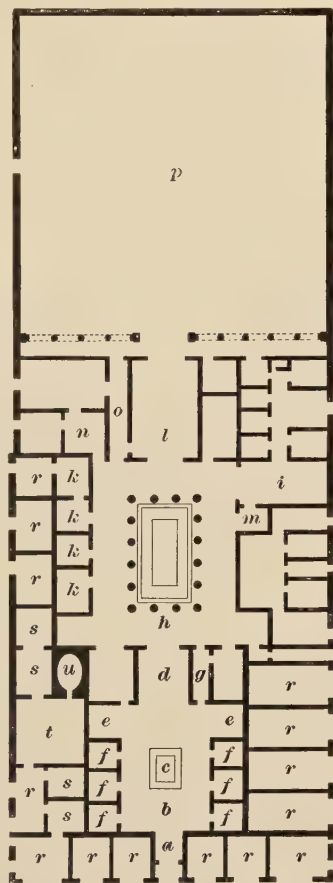


FIG. 103. PLAN OF THE HOUSE OF PANSA, POMPEII

Round the front and sides of the house were shops *r*, store rooms *s*, and a bakehouse *t* with an oven *u*.

168. Later Forms of Roman Houses.—The Roman house was originally planned as a building of one story only ; it afterwards became customary to add one or more upper floors. Small staircases led to the bedchambers and other rooms placed on the upper floor of the building. These rooms were lighted by windows, which could be closed by shutters, formed either in the external wall to the street or in the inner wall which enclosed the internal court. In the largest houses, halls and reception rooms, known respectively as *æci* and *exedræ*, were numerous and spacious, and in addition there were *penacothecæ*, or picture galleries, libraries, chapels, extensive bathrooms, and other apartments. The kitchen, with a scullery and bakehouse attached, was generally placed at the end of the peristyle. A spacious portico separated the house from the garden. Wealthy Romans decorated their dwellings with the utmost magnificence. Marble columns, mosaic pavements, and priceless sculptures adorned the rooms, the walls of which were richly painted and divided into panels containing painted figure groups representing mythological subjects or historical events.

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

169. Plans.—The immense variety of form shown in the plans of Roman buildings and exemplified by the use of the square, the rectangle, the ellipse, and the circle as the bases of design, was brought about by the diverse purposes that the structures were designed to serve. As republican simplicity gradually disappeared, the citizens of Rome became desirous of displaying their wealth by the erection of sumptuous public and private buildings of the most extensive and elaborate character. The plans of these structures, which include palaces, temples, mansions, basilicas, public baths, amphitheatres, theatres, fora, monuments, tombs, aqueducts, and bridges, were arranged with remarkable

skill in order to fulfil, in the most complete way possible, all the practical requirements of each type of building. And by throwing aside the restrictions imposed by the Hellenic use of the stone lintel and substituting an arched form of roof covering, the Romans were enabled to vault spaces of immense area without having recourse to the column, or pier, for intermediate support.

170. Walls.—The walls of the buildings of ancient Rome were usually constructed either of solid rectangular blocks of masonry or of concrete faced with stone or brick.

Although mortar was introduced at a very early date it was not used as a binding material, but simply to give the joints and beds of the stone an even and smoothly fitting surface, and in the later buildings of the Romans it was often omitted as being altogether unnecessary. Immense pains were taken by the Romans to ensure the close fitting of the joints and beds of the stonework, and, during the republican and early imperial period, each block was carefully fastened to the adjoining one with iron dowels, or by clamps, turned down at each end and fixed with melted lead. Concrete was by far the most important of the building materials of ancient Rome. It was made by mixing *pozzuolana*, a volcanic ash, from which a strong hydraulic cement was manufactured with lime, broken stones, and sufficient water to reduce the whole to a semifluid mass and enable it to be cast into the required form of wall, pier, or roof.

171. As a rule bricks, whether used for walls or arches, were merely facings and, consequently, had little constructional importance. With the exception of those specially made for forming the angles of walls, Roman bricks were triangular in form and, when used as facings were well tailed into the concrete core of the wall in which they were placed. The great constructional ability and engineering skill of the architects were, to some extent, the secret of the strength and durability of Roman buildings. Every important wall, or pier, was practically one solid homogeneous mass in which openings, of almost any required form, could be made with perfect safety.

172. Roofs.—The peculiar form and method of construction employed by the Romans for covering large areas with concrete

vaults enabled them to produce internal effects which up to that time had been unknown. When the floor of the space to be roofed in was circular in form, the dome was generally employed.

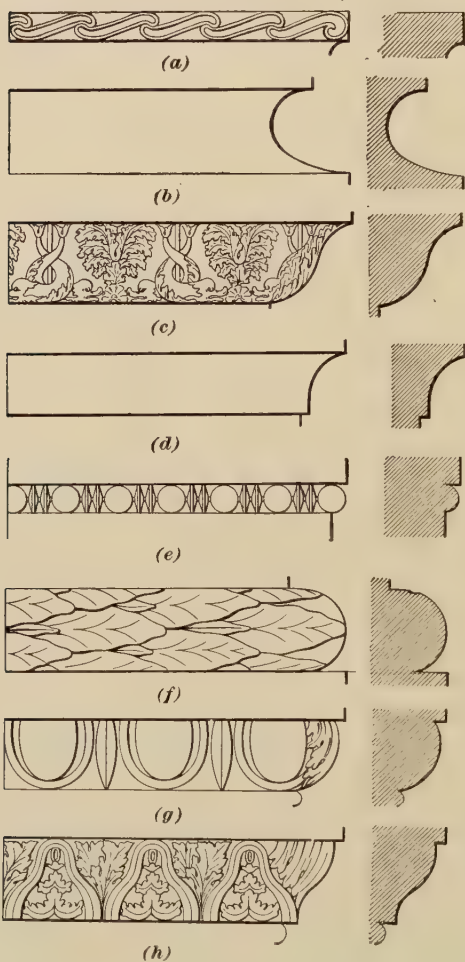


FIG. 104

The domed covering, a favourite feature with Roman architects, is by far the most monumental of all forms of roof. Although ordinary wooden roofs of slight pitch were used for private dwellings, for rectangular temples, and for the earlier basilicas, yet ultimately they gave place to those of a more durable kind in which the favourite arch form could be employed.

173. Openings.

The almost universal adoption of the arch led to a great change and development in the treatment of Classic architecture. In Greek art the difficulty of obtaining lintels of sufficient length to span large openings limited the sizes of the apertures,

but under the Roman system of construction doorways, windows, and arcades were often of great width and height. Small openings were sometimes square-headed in form, but as a rule the arched head was preferred.

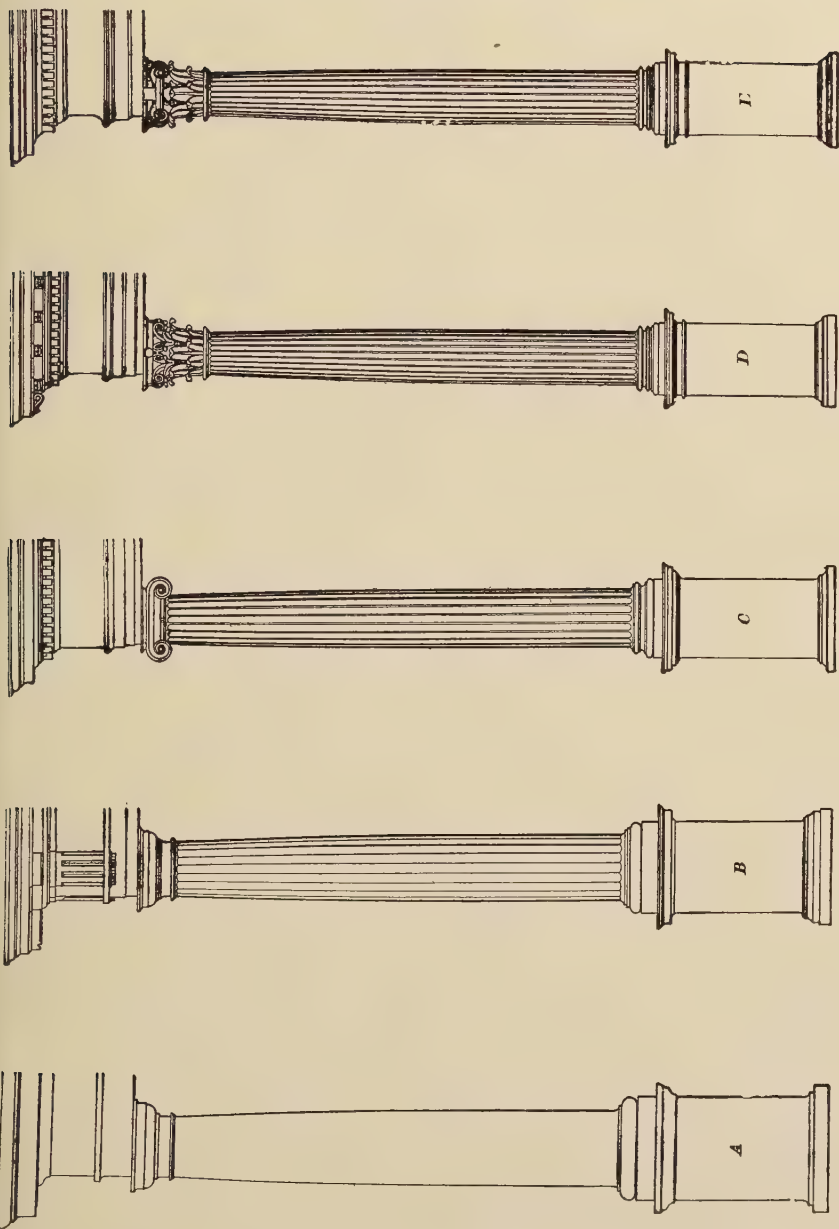


FIG. 105

174. Mouldings.—The profiles of Roman mouldings, which consisted of segments of circles, were much less subtle and refined than those of the Greeks, and a comparison between Fig. 60 and Fig. 104, which represent the Greek and Roman treatment of similar mouldings, arranged in the same order, is instructive. For instance, the Roman cyma-recta, Fig. 104 (c), has much more projection than its Grecian prototype; the Roman ovolo, (g), is merely the quadrant of a circle, while the contour of the torus, (f), is either a semicircle or a semiellipse. The enrichments used by the Romans to embellish mouldings, although very similar in form to those found in Grecian architecture, are far less graceful in design. Nor is the carving executed with the delicacy of treatment always associated with Greek decoration.

175. Details of Roman Orders.—The five Roman orders are each divided into the following principal parts, namely: (a) the pedestal; (b) the column; and (c) the entablature. Each of these parts is subdivided into three parts as follows:

Pedestal: (1) base; (2) die; (3) cap.

Column: (1) base; (2) shaft; (3) capital.

Entablature: (1) architrave; (2) frieze; (3) cornice.

176. Columns.—The names and proportions of the columns,

TABLE I
PROPORTIONS OF THE ROMAN
ORDERS

Name of Order	Height of Column, Including Base and Capital, in Diameters	Height of Entablature, in Diameters	Height of Entablature Relative to Height of Column
Tuscan . .	7	$1\frac{3}{4}$	$\frac{1}{4}$
Doric . .	8	2	$\frac{1}{4}$
Ionic . .	9	$1\frac{4}{5}$	$\frac{1}{5}$
Corinthian	10	2	$\frac{1}{5}$
Composite .	10	2	$\frac{1}{5}$

which with their entablatures constitute the five Roman orders, can be ascertained by reference to Fig. 105. In this illustration *A* shows the Tuscan order, *B* the Doric, *C* the Ionic, *D* the Corinthian, and *E* the Composite order. The proportion of each order is given in Table I.

Unless otherwise stated, by the diameter of a column is meant its *greatest diameter* immediately above the base moulding.

The entablatures are proportioned to the columns of the order to which they belong, the rule given by the Italian architect Palladio being as follows. In the Tuscan and Doric orders the height of the entablature to the column is as one to four and in the Ionic, Corinthian, and Composite as one to five. As to the pedestal, its height, in each case, is one-quarter that of the combined height of the column and entablature.

177. Detail Proportions

of the Tuscan Order.—The details of the Tuscan order are shown in Fig. 106, in which *a* represents the capital, *b* the entablature, and *c* the base of the column. The base and capital of the Tuscan order are a semidiameter of the column in height, the capital projects one-quarter of the diameter of the column at its *smallest* part, and the base has a projection of one-third of the semidiameter of the column immediately above its base. Of the seven parts into which

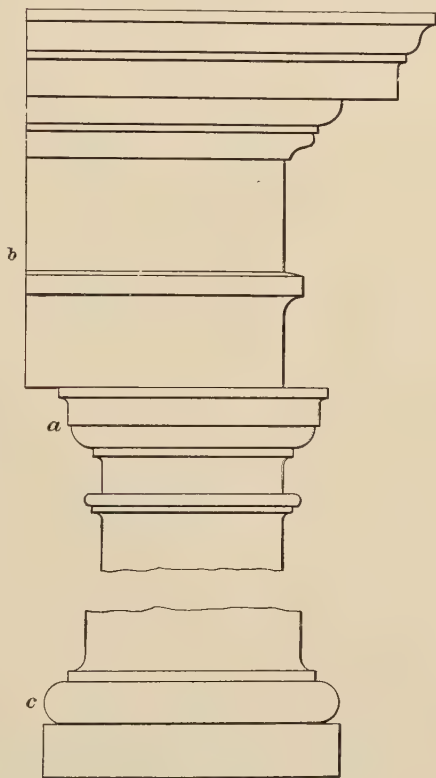


FIG. 106

the entablature is supposed to be divided, *two* are given to the architrave, *two* to the frieze, and *three* to the cornice. The architrave projects one-sixth of its height beyond the main surface of the frieze and the height and projection of the cornice are equal. To obtain the *entasis* of the column it is necessary to divide the latter into three equal parts. From the top of the lower division it diminishes to the top of the upper division, below the

necking, one-fifth of its semidiameter on each side ; this diameter to be measured at the top of the lower division. The projections of the capital, architrave, and cornice are set off from a

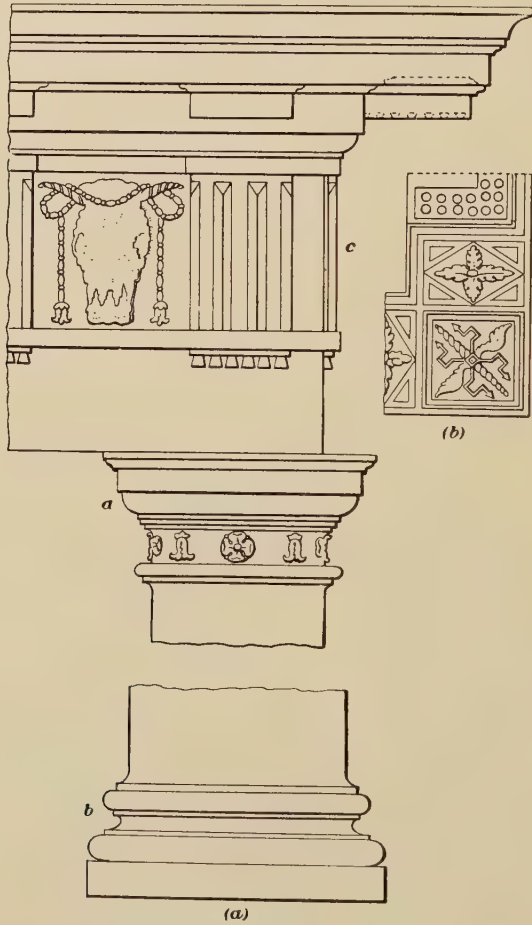


FIG. 107

vertical line which coincides with the smaller diameter of the column.

178. Detail Proportions of the Roman Doric Order.—The base and capital are each a semidiameter of the column in height.

The base projects on each side one-third of the semidiameter and the capital one-fourth of the diameter of the column at its smallest part. The column diminishes one-sixth of its semi-

diameter on each side from the third part of its height to the top, and the projection of the cornice is equal to half the height of the

whole entablature. The supposed division of the entablature into eight parts gives two parts for the height of the architrave, three for the frieze, and three for the cornice.

Details of the Roman Doric order are shown in Fig. 107 (*a*), in which *a* represents the capital, *b* the base of the column, and *c* the entablature. At (*b*) is a plan of the soffit of the cornice.

179. Detail Proportions of the Roman Ionic Order.—Fig. 108 (*a*) illustrates the several parts of the Roman Ionic order, in which *a* shows the entablature, *b* the capital, and *c* the base.

At (*b*) is a plan of one-quarter of the capital, at (*c*) the profile of the capital, and at (*d*) an elevation of one-half of the barrel of the volute. The base and capital of the Ionic order are each in height a semidiameter of the column, which diminishes on

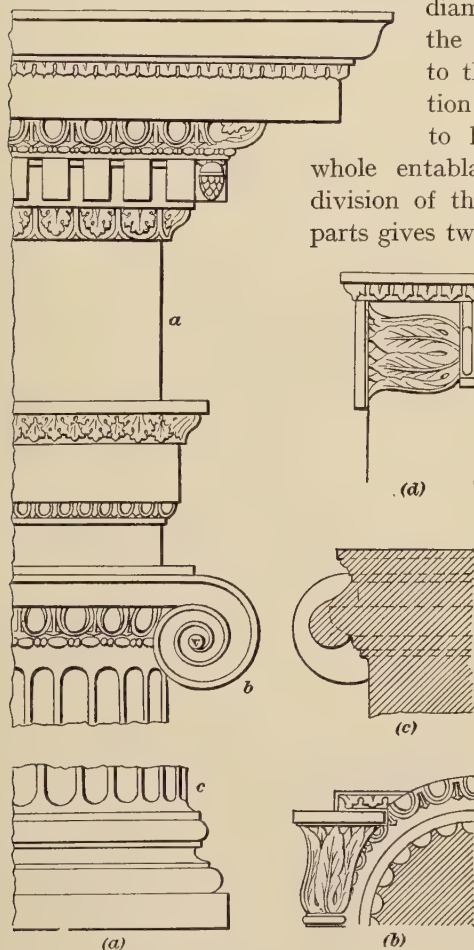


FIG. 108

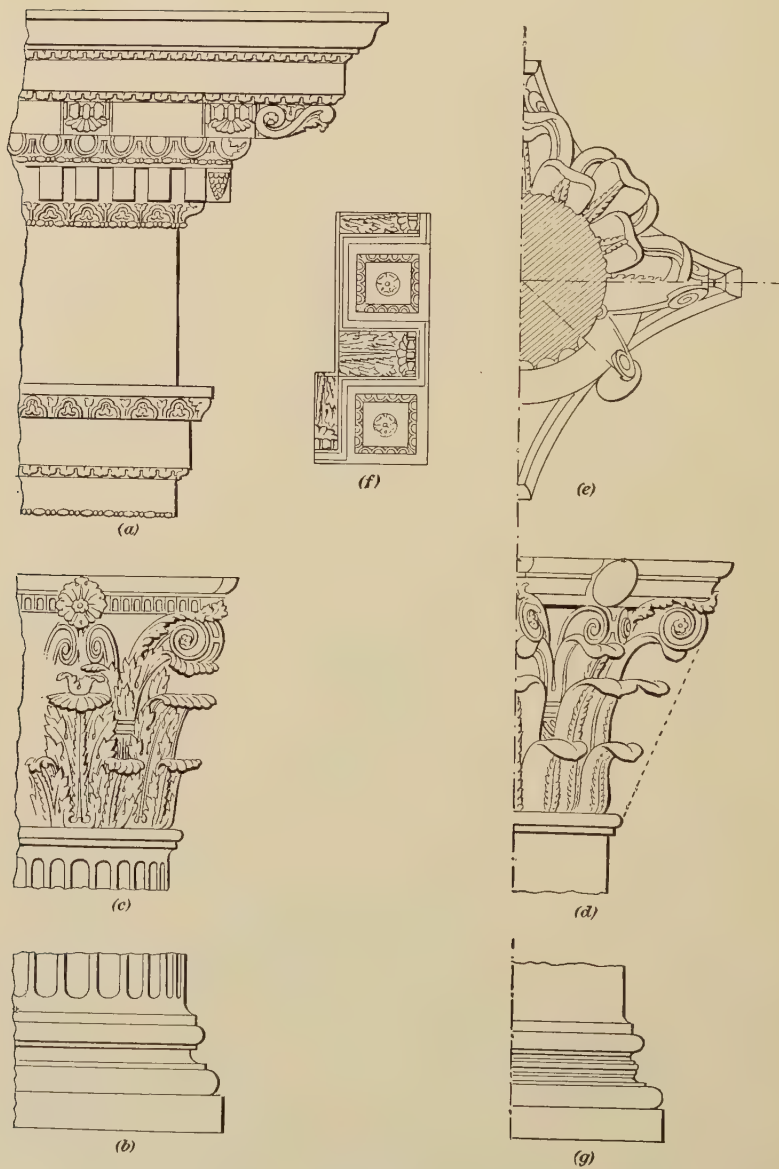


FIG. 109

each side one-sixth of its semidiameter. The height of the entablature is divided into five parts, *three* of which are divided equally between the architrave and frieze, and *two* given to the cornice, the projection of which is equal to its height. The architrave projects a quarter of its height and the capital one-half of the semidiameter of the column on each side.

180. Detail Proportions of the Roman Corinthian and Composite Orders.—The Roman Corinthian order is shown in Fig. 109, (*a*) representing the entablature, (*b*) the base moulding, known as the attic base, and (*c*) the Corinthian capital; (*d*) shows the extent to which the leaves of the capital should project, it being requisite that the points of the ranges of foliated forms should fall within a line drawn from the astragal to the extremity of the volute. Fig. 109 (*e*) is a half-plan of the capital, looking up, taken at three different levels and showing the fluted shaft, the abacus, and the leaves of the capital; (*f*) is a plan of the soffit of the entablature and (*g*) shows the antique Corinthian base often used by the Romans.

The Composite order is illustrated in Fig. 110, in which *a* is the entablature, *b* the capital, and *c* the base. The height of the capital of the Corinthian and Composite orders is one and one-sixth diameters. The other proportions are similar to those of the Ionic order.



FIG. 110

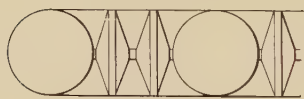
181. Roman Alterations in Greek Orders.—The Romans were unable fully to appreciate the simple grandeur and dignity of the Greek Doric style, and in adapting it to their own requirements they added a base, usually consisting of a square plinth and a



(a)



(b)



(c)

FIG. 111

large torus, altered the beautiful contours of the mouldings, and otherwise succeeded in destroying much of the original charm of this order. Nor were the alterations made by the Romans more successful, as regards the form of the Ionic capital, under which the sides of the abacus became concave in plan and flowed into four angular volutes. But, on the other hand, the Corinthian order, with its beautifully foliated capital, though varied and enriched by the Romans, fully retained its original

graceful and pleasing aspect and became the national Roman order. The Composite capital, as its name implies, was evolved by the combination of elements taken from Corinthian and Ionic models.

182. Ornamentation.—Ornamentation, as mouldings, was chiefly derived from Greek art. Statues, sometimes mere copies of older and better examples of the plastic art, bronzes, mosaics, inlaid marbles, and ornamental plaster were all used for the decoration of Roman buildings. Colour ornamentation was freely applied to vaulted ceilings, and general richness of effect appears to have been preferred to refinement of detail. The internal wall surfaces of monumental buildings were decorated with linings of costly marbles, often arranged in a well-devised scheme of paneling. In addition to other Greek decorative motifs the acanthus leaf was largely used in Roman ornamentation and applied to spiral scrolls, as shown in Fig. 110, and other forms of enrichment. Festoons of flowers and foliage, masks, and grotesques were also in common use. Fig. 111 illustrates some typical Roman enrichments, an enriched cymatium being shown at (a), a fretwork design at (b), and an enriched bead at (c).

EARLY CHRISTIAN ARCHITECTURE

CONVERSION OF ROMAN BUILDINGS INTO CHURCHES

BASILICAS AND BAPTISTERIES

183. Basilicas.—The reign of Constantine the Great was specially signalized by two events: (*a*) the removal of the seat of government from Rome to Constantinople, and (*b*) the adoption of Christianity as the state religion of the empire. Although the Romans were usually tolerant on all questions of religion, yet before the conversion of Constantine the Christians had suffered bitter persecutions from the heads of the state, who feared that the rapidly increasing organizations of the new religion would become politically dangerous. By special favour it was occasionally possible for the Christians to obtain the use of some public building for the celebration of their religious festivals; but they were neither allowed to erect churches of their own nor to adapt existing buildings to the requirements of their ritual. Indeed, in the early days of the movement so close a watch was kept on the Christian converts that they were forced to hold secret meetings for worship, either in private houses or in the catacombs of Rome. Ultimately, when under Constantine the protection of the law was extended to Christianity, it became necessary to provide places for public worship and many of the civil basilicas were either temporarily used for this purpose or converted into permanent churches. Not unnaturally the form of the Roman basilica, with its spacious nave, its aisles, and its tribune, in which the chair of the magistrate suggested the throne for the bishop, appeared to be an eminently suitable and convenient one for a Christian church, the simplicity of the design

giving a certain solemn impression. As a matter of fact, up to the present time no better arrangement has been devised for an ecclesiastical building, and consequently the plan of the Roman basilica has been applied to Christian cathedrals and churches in all parts of the world.

184. Usually planned with its long axis east and west, and with the tribune and altar at the western end, the Christian basilica was placed behind a forecourt, or *atrium*, which was entered from a projecting porch. This feature is found in the church of St. Clemente at Rome, Fig. 112 (a). A portico, or covered passage, the roof of which rested on an external wall and, internally, on an open arcade, surrounded the atrium on its four sides, the covered way on the west side forming the *narthex*, or portico entrance, of the basilica proper. A fountain, which supplied a large basin with water, stood in the centre of the atrium. Archways hung with curtains connected the narthex with the basilica and led to the nave, a parallelogram in plan, which was separated from its aisles by rows of columns. The aisles, one story in height, were lighted by windows placed high in the external walls and the nave by other windows placed in its walls near the ceiling. Timber roofs and flat ceilings covered both nave and aisles. In some instances the nave columns supported continuous entablatures instead of arches. Different parts of the body of the basilica were set apart for separate classes of worshippers. The north aisle was appropriated for women and the south for men; the western portion of the nave was set apart for a class of worshippers known as *substrati*, or penitents. The remaining portion of the building was used by those who enjoyed the right of full communion. Westward the nave terminated in a lofty arch, called the arch of triumph, beyond which were the *sacrarium*, or sanctuary, and the *presbyterium*, or apse. A slightly raised platform, the *chorus*, surrounded by low walls or screens, extending eastward from the arch of triumph into the nave, had *ambones*, or raised stands, similar to pulpits, on its north and south sides. The rest of the furniture for the chorus, or choir, consisted of the *paschal*, a large candlestick, and seats for the clergy, subdeacons, and readers.

185. Steps, placed within the triumphal arch, led to the sacarium, under the floor of which was the confessional. The altar was elevated over the centre of the sacarium floor and enclosed by a *ciborium*, or arched canopy. Behind the altar the tribune projected westward from the end wall of the basilica in the form of a semicircular apse, which was covered by a semidome, richly decorated with mosaic. The bishop's throne, centrally placed and elevated, and, at a lower level, the seats of the *presbyters*, or elders, were ranged round the semicircular wall of the tribune. Recesses, or small rooms, were formed on each side of the tribune for the use of those who officiated at the celebrations. That on the left of the altar, or south side of the sacarium, was known as the *prothesis*, or chapel of the credence; the other recess, on the right of the altar, was a kind of vestry or sacristy in which the deacon prepared the holy vessels for the celebration.

186. When, shortly after the conversion of Constantine, Christianity under its imperial protection grew in popular favour, the erection of churches was commenced with great enthusiasm. Entering into the movement with zeal and energy, Constantine caused the Basilica Constantiniana, or church of St. John Lateran, and the basilica of St. Peter, to be erected at Rome. The latter building, Fig. 112 (*b*) and (*c*), which was commenced about the year A.D. 330, adjoined the circus of Nero, where, according to church tradition, St. Peter suffered martyrdom. In this church, shown in plan in Fig. 112 (*b*), the usual arrangement was retained, the tribune being placed at the western end and the atrium at the eastern. The latter, which consisted of a quadrangular enclosure surrounded by a portico, measured from east to west, including the narthex, about 256 feet, and from north to south about 206 feet. The body of the basilica was entered by the six doorways of the narthex. It measured internally 288 feet in length by 206 feet in width, and was divided by four rows of columns into a nave and four aisles. The nave, which was about 75 feet in width, was separated from the inner aisles, as seen in the sectional view, Fig. 112 (*c*), by rows of antique Corinthian columns 35 feet in height, some of which were of granite and

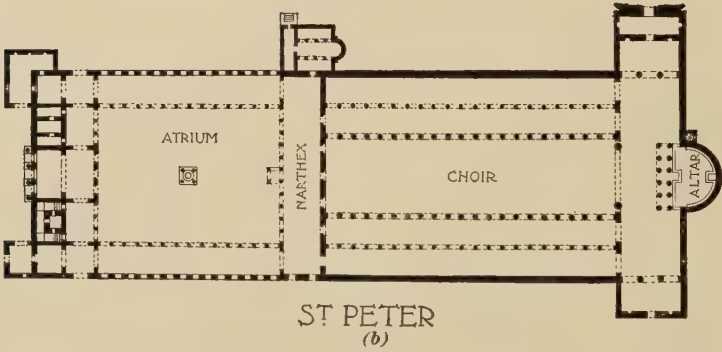
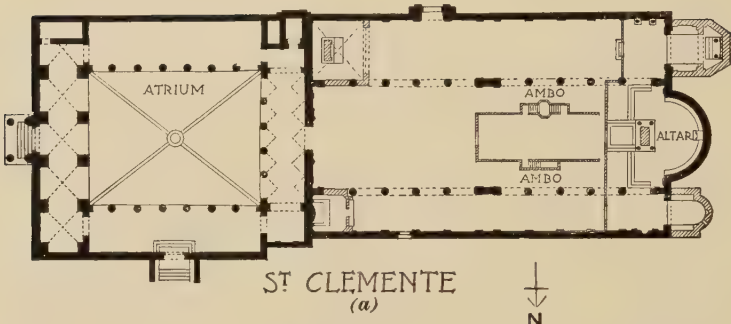


FIG. 112. PLANS AND SECTION OF CHRISTIAN BASILICAS

some of marble. These columns supported massive entablatures the cornices of which were of sufficient projection to form narrow galleries. The nave walls, which were pierced with large semi-circular-headed clerestory windows, rose to a height of about 113 feet from the floor and supported a richly coffered and decorated flat roof. The columns that divided the inner from the outer aisles, being considerably shorter than those of the nave, were raised on pedestals and carried arches instead of horizontal entablatures in order to obtain the desired height, as seen in Fig. 112 (c).

187. At the west end of the nave the sacrum extended, north and south, in a kind of transept. It was 55 feet in width and of the same height as the nave. The nave and aisles communicated with the sacrum through five archways, that of the nave, known as the arch of triumph, being about 96 feet in height. A semicircular apse, of the same height and width as the arch of triumph, formed the tribune. Its raised floor projected into the sacrum and was approached therefrom by steps placed on each side of the confessional.

The pontifical throne, which stood against the wall in the centre of the apse, was surrounded by seats for the cardinals and other dignitaries of the church. In the centre of the opening of the apse, under a silver *ciborium*, was the high altar; below it was the confessional, a subterranean chapel, dedicated to St. Peter and containing his sarcophagus. Twelve marble columns, arranged in two rows and supporting entablatures, stood in front of the apse. The exact arrangement of the original choir is not known, but it extended some distance into the nave and was in the nature of a raised platform enclosed with railings or screens. This interesting basilica underwent many alterations and renovations from the time of its erection, under Constantine, until its destruction, at the beginning of the sixteenth century, to make way for the present church of St. Peter.

188. The basilica of St. Clemente, at Rome, Fig. 112 (a), still shows in a very complete form the early arrangement of the choir and sacrum; but, although the plan of the building may be accepted as that of a fifth-century basilica, nothing in the

existing structure can be attributed to so early a date. It consists of a nave and two aisles, of unequal width, separated from the nave by arcades of antique Ionic columns. The two chapels, at the ends of the aisles, are later additions. A marble screen encloses the raised floor of the choir. Fig. 113 illustrates the interior of the basilican church of St. Paul. The nave arcades of this church are formed with plain Corinthian columns carrying semicircular headed arches, and both nave and aisles are



FIG. 113. INTERIOR OF THE BASILICA OF ST. PAUL, ROME

covered with richly decorated wooden ceilings. With the removal of the seat of government to Constantinople many of the public buildings of Rome were neglected and gradually fell into a state of decay. Soon after the formal division of the Roman power into the western and eastern empires, in A.D. 395, the invasions of the Goths and Vandals increased in strength and vigour and indicated the approaching fall of the older empire. The dangerous position of the western empire at this period, and the spirit of apathy which it brought about, may probably account for the fact that many of the basilicas at Rome were built and adorned with materials and columns taken from older buildings.

189. Baptisteries.—**Baptistery** was the name given to a detached building adjoining the basilica, or situated near it, in which baptism was administered. Originally, a small baptistery formed part of the atrium of the basilica, but afterwards detached baptisteries of considerable size were built. The baptistery, which was almost always circular or polygonal in plan, consisted of a lofty central portion, lighted by windows placed high and supported by a ring of columns separating the central area, containing the font, from the surrounding aisle. An early example of these buildings is found in the baptistery of St. John Lateran at Rome.

HISTORY OF ARCHITECTURE

(PART 2)

BYZANTINE ARCHITECTURE

NOTES ON THE BYZANTINE EMPIRE

GEOGRAPHICAL, HISTORICAL, AND ARCHITECTURAL

1. Geographical.—Constantinople, the capital of the East, or Byzantine Empire, shown on the map, Fig. 1, was founded on the site of the ancient Greek town of Byzantium built on the shores of the Bosphorus in 667 B.C. Its fine maritime position and spacious harbour gave the new capital of the Roman Empire complete control over the extensive trade carried on by the merchants of the west with the northern part of the empire.

2. Climate.—Although liable to sudden changes, yet, owing to its position, natural drainage, and the currents of the Bosphorus, the climate of Constantinople is extremely healthy.

3. Religion.—The Christian religion, as the state religion of the Roman Empire, prevailed at Constantinople but, subsequently, dissensions arose between the popes of Rome and the heads of the Church at Constantinople which culminated in the separation of the Greek and Latin Churches.

4. Historical and Architectural.—When Constantine the Great had overthrown the last of his rivals and was the sole emperor

of the Roman world, he determined to found a capital more conveniently situated for administrative and military purposes than ancient Rome. His choice fell on Byzantium, which stood on the shore of a magnificent bay known as the Golden Horn and, as a maritime city, was in constant communication with the coasts of Asia Minor, Syria, Thrace, and Macedonia. In addition, while easily accessible either by land or sea from all parts of the empire, Byzantium was so strongly situated that its emperor trusted it might prove impregnable to barbarian attacks from the north. Accordingly, the limits of the new city were marked out, in the ceremonious fashion of Roman times, and sites having been chosen for the forum, the basilica, the royal palace, the public baths, and the hippodrome, the construction of these and many other buildings was commenced. Early in A.D. 330 the city was in a sufficiently advanced state to enable the festival which celebrated its consecration to be held, and by imperial edict the city was named "New Rome." But from the first the world identified the new capital of the Roman Empire with the name of its founder and persisted in calling it *Constantinople*, or the city of Constantine.



FIG. 1

5. Constantinople was planned in the ancient Roman manner. Its boundary lines included the whole of the seven hills comprised in the peninsula between the Propontis and the Golden Horn, and the milestone, from which all the distances of the Eastern world were to be measured, was set up on rising ground outside the walls of the old city of Byzantium.

A site of 150 acres within the south-eastern boundaries of Byzantium, having been chosen for the royal residence, was cleared of all buildings to give space for a magnificent palace with immense gardens and pleasure grounds. North-west of the palace was the large paved open space, destined to become the centre and focus of civic life, the *Augustæum*, or forum, 1,000 feet long and 300 feet broad. On its east side a long colonnade connected the patriarch's palace, the senate house, and the public baths; on its west side stood the vast *Hippodrome* where the pacific games, which had replaced the gladiatorial fights now forbidden by Christianity, were held.

6. The whole of the northern end of the Hippodrome was occupied by the emperor's gallery, the *kathisma*, which contained seats for hundreds of his retinue. The *spina*, a low longitudinal divisional wall, built to mark the track for the chariots, was ornamented with three monuments, two of which, namely, an obelisk from Egypt and the three-headed dragon serpent dedicated by Pausanias at Delphi after the Greek victory of Plataea, were of great antiquity. A square bronze column formed the third monument of the spina. The walls of the Hippodrome have long since perished, but these three monuments are standing in the Ottoman capital of to-day in the midst of the open space which the Turks still call the *Atmeidan*, or place of horses. Numerous statues and other monuments ranged along the eastern wall of the Hippodrome were added by successive emperors until they extended throughout the whole length of the forum. North of the Hippodrome stood the great basilican church of *Hagia Sophia*, or Divine Wisdom, which Constantine erected for his Christian subjects. North and west of the forum the boundaries of the city extended for miles and combined many notable buildings, which, however, were generally of less interest than those

congregated round the Augustæum. An equestrian statue of Constantine, which stood by the palace of the governor of the city, was one of the chief objects of interest in Constantinople down to the end of the Middle Ages.

7. On the death of Constantine in A.D. 337 the realm was divided between his sons and nephews, but a succession of civil wars ended in the concentration of the whole empire under one ruler, Constantine II. In A.D. 376 the Roman Empire was again divided. The dynasty of Constantine had passed away and the Eastern Empire was ruled by Valens, whose army was defeated and almost destroyed by the Goths at Adrianople, a calamity which brought with it the first attack on Constantinople that the city had known since its change of name. Ravaging the country as they hurried through it, the Goths appeared at the gates of Constantinople. But, overawed by the extent of the capital and the strength of its fortifications, their courage failed them and they marched back to Thrace without attempting its capture. During the reign of Justinian, A.D. 527 to 565, the empire was in a more prosperous condition than it had been at any time since the death of Constantine. While the West had been slowly breaking up, the Eastern Empire had maintained its unity, and Justinian, taking advantage of the exhaustion of the barbarian races, and overthrowing the kingdom of the Vandals in 533, and that of the Goths in Italy in 553, succeeded in reuniting the greater part of the two divisions of the Roman Empire. But for many years internal changes had been developing in Constantinople, and the national Roman characteristics, once so strongly marked in the city of Constantine, were disappearing and Greek influence becoming paramount. Justinian was the last emperor who spoke Latin as his mother tongue, and his successors were better skilled in the Greek than in the Latin language. With the fall of the Western Empire, conquered by Teutonic barbarians, in A.D. 476, Constantinople, thus isolated from the Latin-speaking race, was bound to come under Greek influence. Once having taken root, this influence had a marked effect on the art, the literature, and the manners and customs of the country.

8. The passion for theological controversies, a frequent cause of dissension in the Eastern Empire, was fatal to art. A sect, known as the *Iconoclasts*, or image breakers, would not tolerate religious paintings and sculptures on the ground that respect for images meant a return to idolatry. Several of the emperors, such as Leo the Isaurian, encouraged this fanatical sect, and by assisting in a crusade against the so-called superstition brought about the destruction of a large number of works of art. In A.D. 800 the Pope of Rome, Leo III, crowned Charlemagne, King of the Franks, as Emperor of Rome and transferred to that monarch the allegiance he had hitherto paid to Constantinople. For this and other reasons the Greeks became intolerant of the religious supremacy of the Roman Church, and as they were also opposed to some of its doctrines frequent dissensions arose between the sees of Rome and Constantinople. Several attempts made to reconcile the differences between the two Christian states were unsuccessful and the dispute reached its climax in A.D. 1054, when the court of Rome solemnly denounced the "deadly heresies" of the Greeks. Henceforth the separation of the Greek and Roman Churches, known as the *Great Schism*, was complete. By this upheaval, which was of a political rather than of a religious nature, the Roman Church lost her control over a large portion of the Christian world. Irritated by the revolt against their power the popes of Rome refused their assistance to the Eastern Empire when its very existence began to be threatened by the Turks, and it was not until European civilization was seriously endangered that they instituted the Crusades.

9. In the eleventh century the Pisans and Genoese broke up the power of the Saracens, who were then all-powerful in the Mediterranean, whereupon these states became important maritime powers. After firmly establishing themselves in the seaports of Syria, the Genoese, in alliance with the Venetians, brought about the commercial downfall of Constantinople by diverting the commerce of the West with Persia, Egypt, Syria, and India from the Bosphorus and causing their own cities to become the favoured marts of France, Germany, and Italy.

This commercial rivalry had an enormous effect on the revenues of the Eastern Empire, which relied on its commerce for its wealth, and led to the capture and plunder of Constantinople by the Crusaders. In A.D. 1204, at the instigation of the Venetians, these so-called soldiers of the Cross were induced to turn aside from their expedition against the Sultan of Egypt and to storm and pillage the ancient seat of Christianity. When this event occurred Constantinople still contained an enormous number of examples of the best period of Greek art. The squares and palaces were crowded with the antique art treasures with which Constantine and his sons had enriched the capital. Of these works of art several great masterpieces such as the Heracles of Lysippus, the great Hera of Samos, and other bronze figures were wantonly destroyed. Many monuments of Christian art fared no better, as the altars and screens of the churches and the tombs of the emperors were stripped bare. The victorious Crusaders elected Baldwin of Flanders, one of their leaders, Emperor of the East, and to him they handed over the ruined and pillaged city. Although the short-lived and unfortunate dynasty of Latin emperors terminated in 1261, yet the restored Greek emperors were unable to hold together the exhausted and impoverished empire, which was now slowly but surely perishing. The end came in A.D. 1453 when Mohammed II, the Ottoman sultan, having set his heart on making Constantinople the centre of his kingdom, took the city by storm and thus terminated the long sovereignty of the Eastern Empire.

10. During its thousand years of existence the Byzantine Empire was subject to constant attacks of numerous and powerful enemies, from the Avars, Bulgarians, and Russians in the north and from the Persians, Arabs, and Turks in the south. The strong position of Constantinople, aided by the skill of her military leaders and the immense financial resources of the country, enabled the Eastern Empire to withstand barbarian aggression for many years and thus ward off this danger from the rest of Europe. And when Constantinople, which had preserved and guarded many priceless treasures of Greek literature, at length fell into the power of her ignorant conquerors, the Greeks, who

fled from their enslaved country, carried with them the ancient writings that were so largely instrumental in bringing about the revival of arts and letters throughout Europe in the fifteenth century.

ARCHITECTURAL CHARACTERISTICS

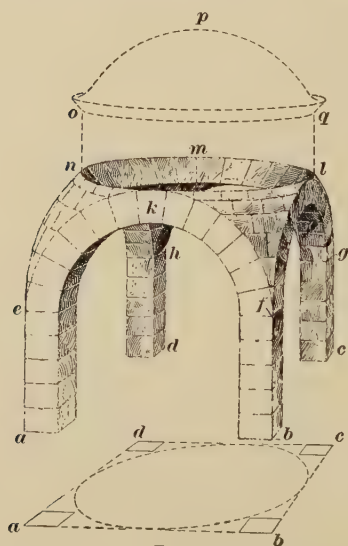
CRUCIFORM PLANS AND DOME CONSTRUCTION

11. Oriental and Grecian Influences.—As left by its founder, Constantinople was essentially a Roman city, which, save for a few old temples in the less important streets that escaped destruction when the new city was laid out, contained no traces of paganism. But in the two centuries that elapsed between the founding of Constantinople, in A.D. 330, and the erection of Justinian's great church of St. Sophia, in A.D. 532, strong Oriental and Grecian influences had left their mark on the architecture of the Eastern Empire. During this period a new style of art had been slowly developing from the old classic forms, and in the reign of Justinian, Byzantine architecture reached its zenith in the magnificent buildings erected by that emperor.

12. Churches Cruciform in Plan.—These structures were not only built in important centres of the empire, such as Constantinople or Jerusalem, but the remains of Justinian's churches are found in remote parts of Cappadocia and Isauria. His great church of St. Vitale, raised in the newly conquered Ravenna, is a well-known characteristic example of Byzantine church architecture. In his churches Justinian brought into use, for the first time on a large scale, the combination of a cruciform plan and a great dome, an arrangement followed in his famous church of St. Sophia at Constantinople. Constantine's basilica had been destroyed by fire and its successor burnt in the riots of A.D. 532. Within a few weeks of the destruction of the latter building Justinian had commenced his preparations for rebuilding it. The third church differed in plan from either of its predecessors. Its form was that of a Greek cross dominated by a flat central dome, east and west of which were two half-domes springing from

semicircular walls. The beautiful columns, of *verde antique* and other marbles, which adorn it internally are not the work of Justinian's day but were plundered from the pagan temples of Asia. Costly marbles, mosaics, and gilding covered the walls and domes of this splendid church, and the style it so well exemplifies has continued in eastern Christian countries, with comparatively few variations, to the present day. And the influence of the early Christian architecture of Constantinople eventually spread still further; for the development of the domes of the basilican churches led to the construction of the great vaulted cathedrals of western Europe.

13. Dome Construction.—The Byzantine system of dome construction is shown in the diagram Fig. 2, where *a, b, c, d* is the



square plan to be covered by a circular dome. Four large semi-circular archways, *ekf, flg*, etc., are carried by piers at *a, b, c*, and *d*; the triangular spaces between the arches above the points *e, f, g, h* are filled in with portions of a circular dome having a diameter equal to the diagonal of the plan *a, b, c, d*. These hemispherical elements, termed *pendentives*, extend to the level of the top of the arches at points *k, l, m, n* where the plan has become circular. Over the circular opening, thus developed from the square plan, a dome is constructed which is sometimes

elevated on a cylindrical-shaped wall, pierced with windows, and known as the *drum*. This combination of a square opening covered with a dome carried on pendentives is one of the principal characteristics of Byzantine architecture and led eventually to many varied arrangements of domes and vaults in large and important buildings.

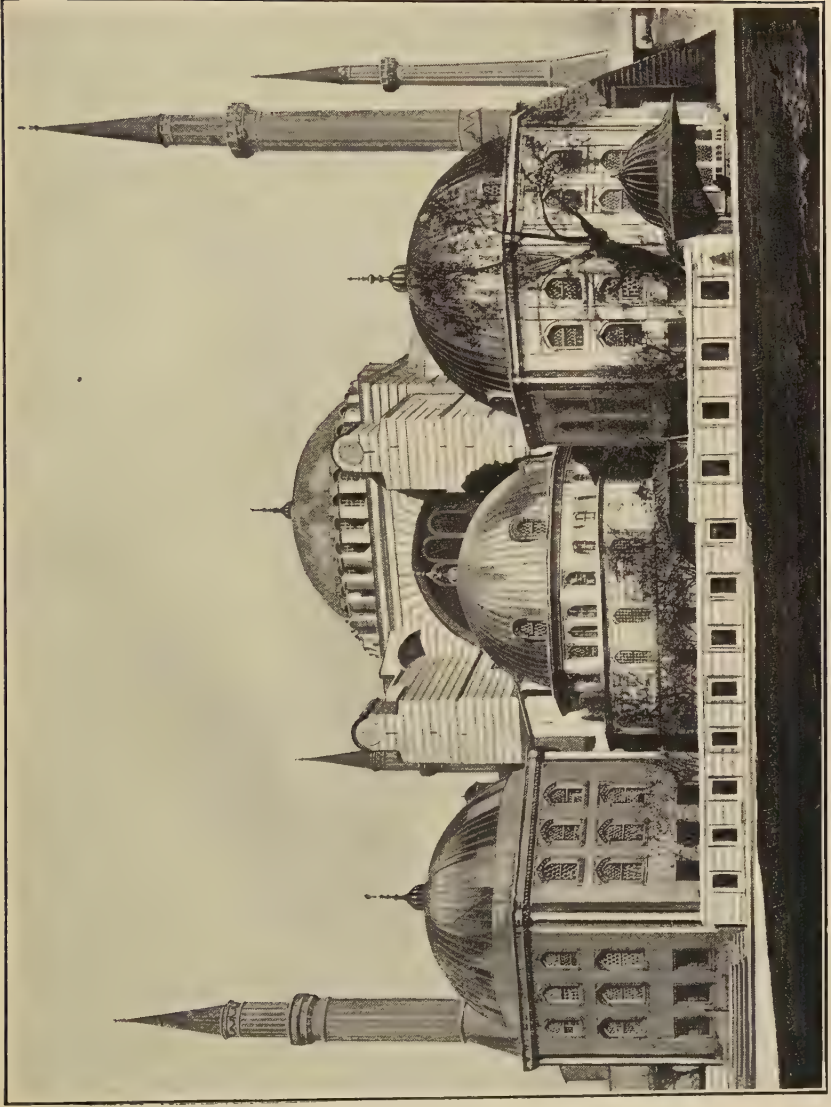
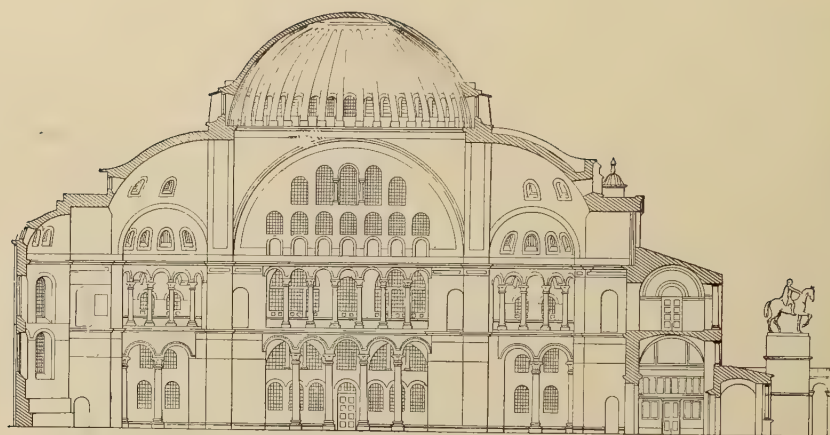
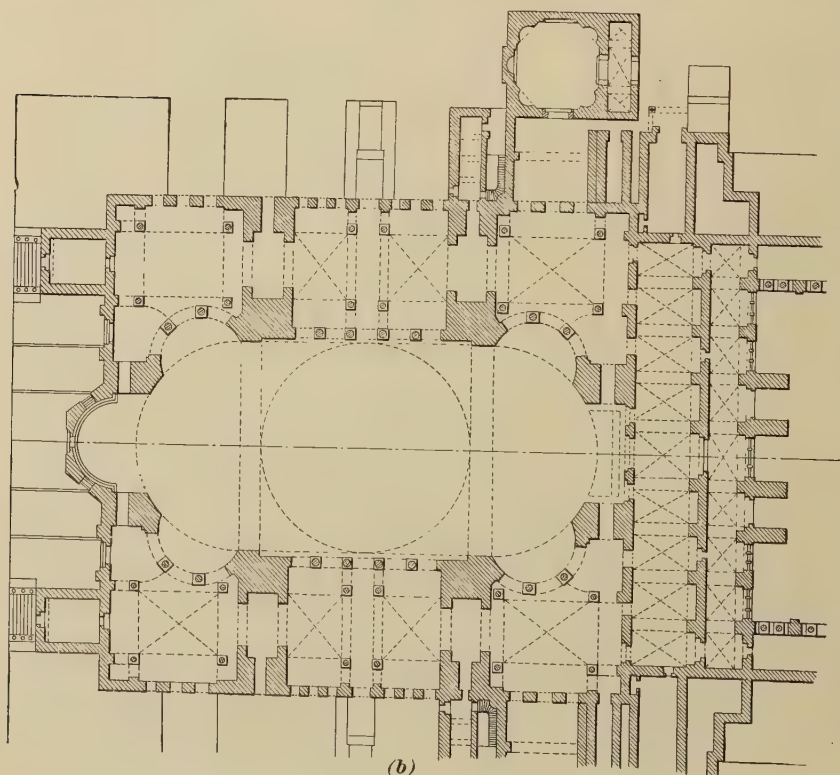


FIG. 3, ST. SOPHIA, CONSTANTINOPLE



(a)



(b)

FIG. 4. SECTION AND PLAN OF ST SOPHIA, CONSTANTINOPLE

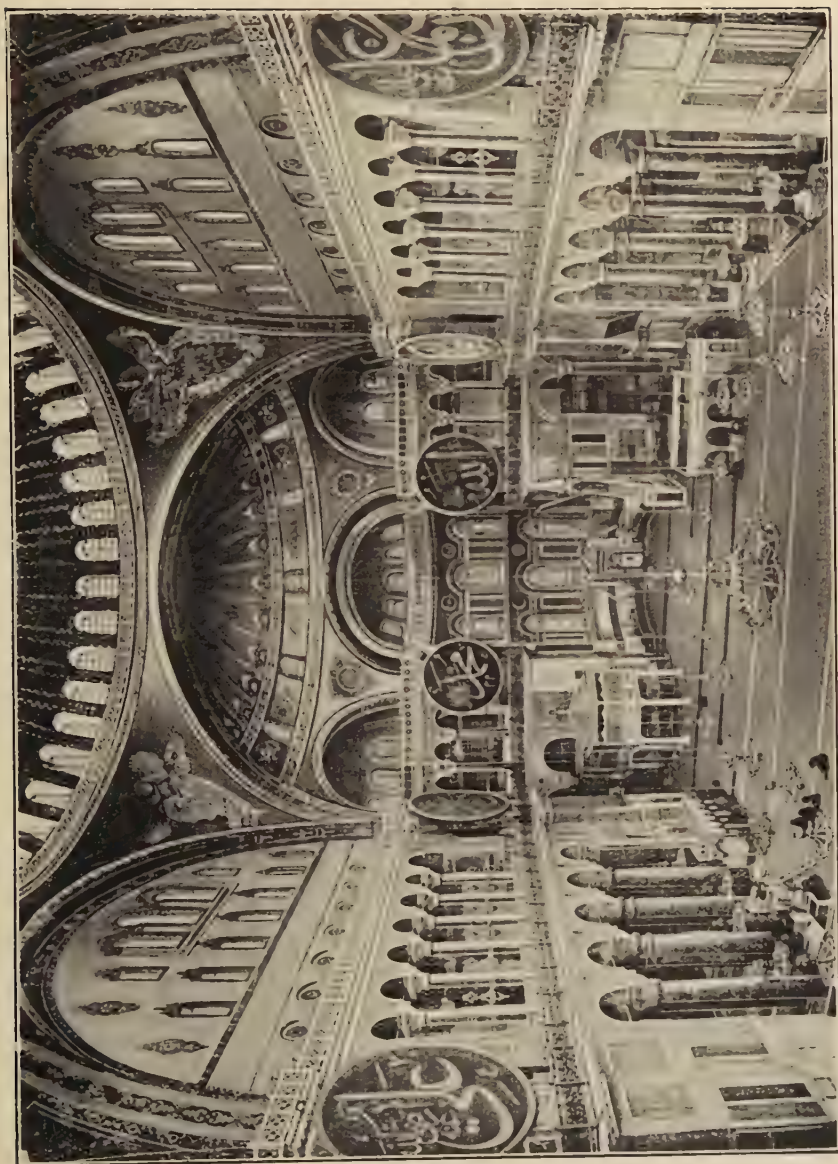
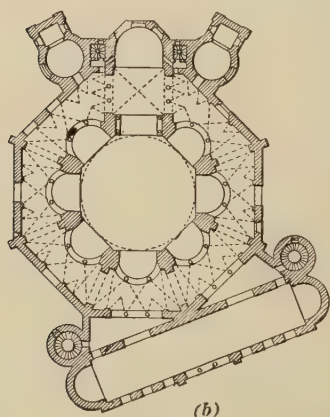


FIG. 5. INTERIOR OF ST. SOPHIA, CONSTANTINOPLE

ARCHITECTURAL EXAMPLES

ECCLESIASTICAL BUILDINGS

14. Church of St. Sophia.—Early in the reign of Justinian, the second church, which had replaced Constantine's basilica of



St. Sophia, was destroyed and in its stead one of the most remarkable buildings in the world was erected by the architects Anthemius of Tralles and Isidorus of Miletus. This building, known as the Church of Santa Sophia, see Fig. 3, is the earliest well-defined example of the adoption of the dome, in preference to the vaulted or timbered roof, for a Christian church. In St. Sophia the main dome, shown in the longitudinal section,

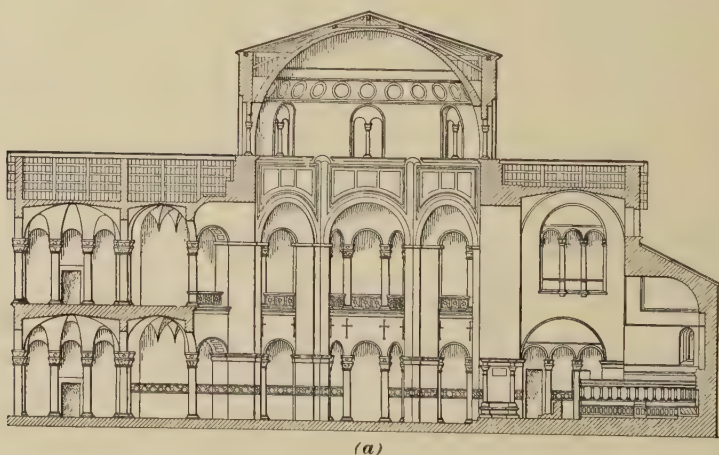


FIG. 6. SECTION AND PLAN OF ST. VITALE, RAVENNA

Fig. 4 (a), is carried on pendentives supported by semicircular arches, and dominates the central space, the square form of



FIG. 7. INTERIOR OF ST. VITALE, RAVENNA

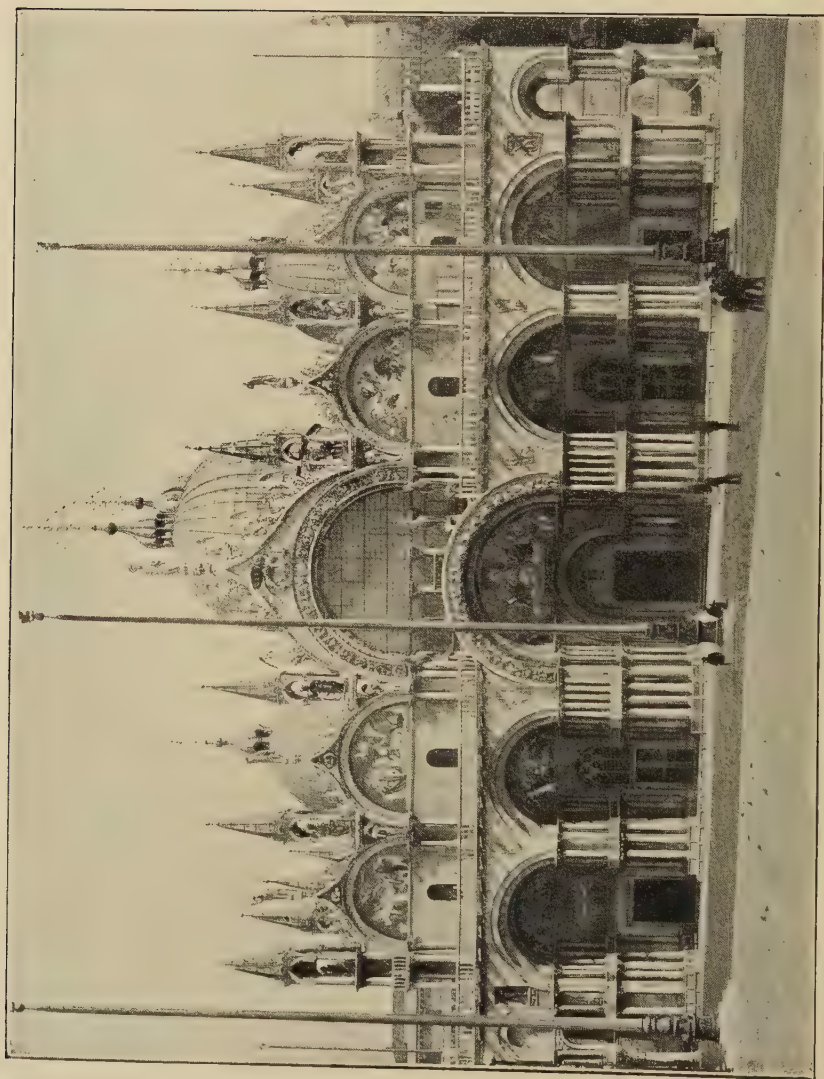


FIG. 8. CATHEDRAL OF ST. MARK, VENICE

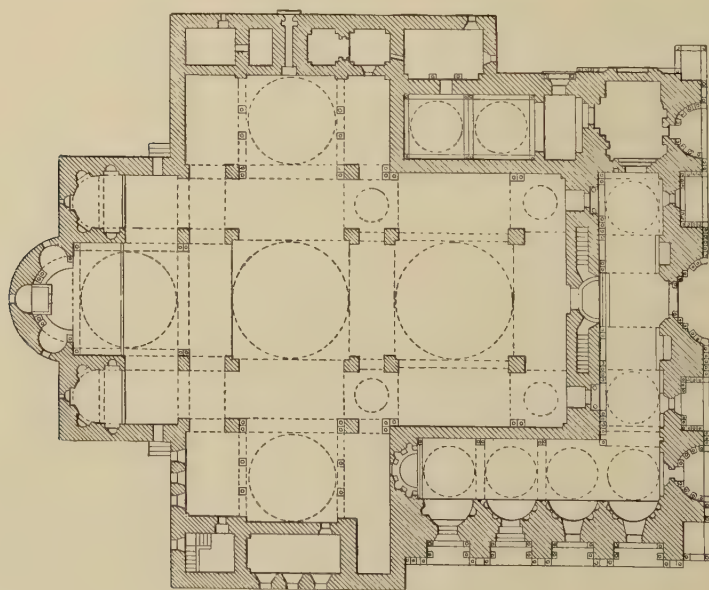
which is emphasised by four immense piers. The flat saucer-shaped dome, 107 feet in diameter, rises to a height of 179 feet and the space it covers is extended east and west by semicircular floor spaces roofed by two half-domes, as seen in the plan, Fig. 4 (*b*), and in the interior view, Fig. 5. Similar extensions rectangular in plan occur on the north and south sides of the square central area. Small *apses*, or recesses, finished with domical roofs springing from a lower level are formed in the circular east and west walls of the main cruciform building, which is brought to the form of a square by arcaded aisles. The dome is lighted by small windows placed immediately above the cornice surmounting the pendentives.

15. Church of St. Vitale.—Other excellent examples of Byzantine art are to be found at Ravenna, northern Italy, of which one of the most interesting is the octagonal church of St. Vitale. It is shown in longitudinal section and in plan in Fig. 6 (*a*) and (*b*); Fig. 7 is an interior view. The church consists of a lofty central dome enclosed by aisles two stories in height. Unlike that of St. Sophia, the dome of St. Vitale is covered with a timber roof and does not appear externally.

16. Cathedral of St. Mark.—The intimate commercial relations that existed at one time between Constantinople and Venice led to the introduction of Byzantine art into the latter city, where the famous Cathedral of St. Mark, Fig. 8, built to replace a former church destroyed by fire in A.D. 976, was consecrated in 1094, during the time of the Doge Vitale Falier. In its form the plan of St. Mark's resembles a Greek cross, as seen from the plan, Fig. 9 (*b*). It has five large domes, one at the crossing and one over each of its nearly equal four arms; three of these domes are shown in the section, Fig. 9 (*a*). The chief façade, erected many years after the interior was completed, is divided into two stages, of which the lower part, comprising five portals, extends along the whole of the western front and is continued in the form of aisles to the north and south arms of the cross. Since it was first built the external appearance of the church has been much altered by the addition of curiously shaped wooden domes and other features, some of which are of a quasi-Gothic character.



(a)



(b)

FIG. 9. SECTION AND PLAN OF ST. MARK'S CATHEDRAL, VENICE

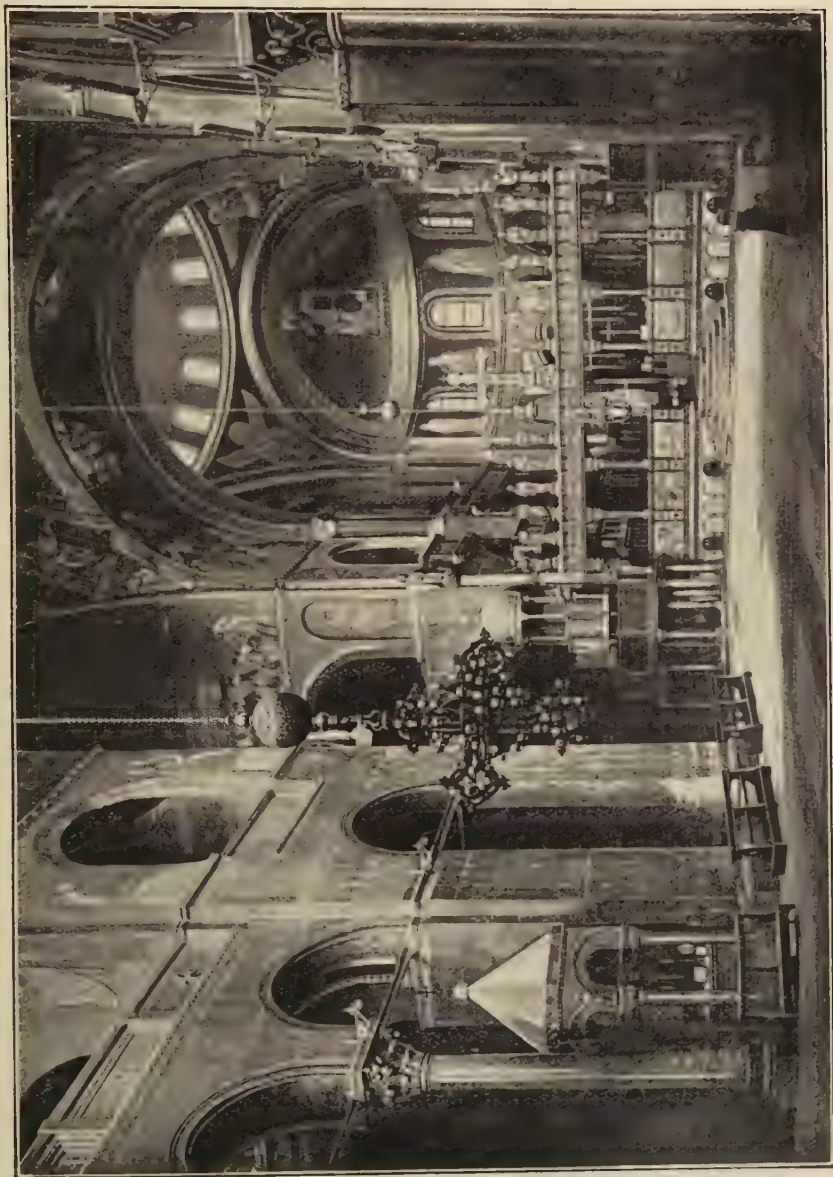


FIG. 10. INTERIOR OF ST. MARK'S CATHEDRAL, VENICE

Internally the effect of this wonderful building, in which rich mosaics, marble pavings, bronze doors, and numerous groups of statuary, often of exquisite design, appear in juxtaposition with elaborate Byzantine ornamentations and examples of pure Greek art, is simply bewildering in its splendour. An interior view of the cathedral is given in Fig. 10.

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

17. Plans.—The plan of a Byzantine church was usually based on a square enclosed by four arches springing from piers placed at each angle. A flat dome supported by pendentives covered the square area thus formed. The piers at the angles were continued as open archways to the north and south walls of the building and formed transepts, sometimes, as in St. Sophia, Fig. 4 (*b*), separated by arcades from the central area covered by the dome. East and west of the principal dome two half-domes, springing from semicircular walls, covered the apsidal ends of the nave of the church. Galleried aisles, placed north and south of the nave, caused the plan to assume the form of a large square enclosing a Greek cross. There are many varieties of the Byzantine plan; for instance, at St. Mark's, Venice, Fig. 9 (*b*), in which, notwithstanding its five domes, the square and cruciform combination is preserved. A less common type of plan is found at the church of St. Vitale at Ravenna, Fig. 6 (*b*), which, octagonal in form, is in many ways similar to the early polygonal churches and baptisteries of the Christian era.

18. Walls.—The walls were usually of brick, faced with marble linings and mosaics. External brickwork was often arranged in patterns.

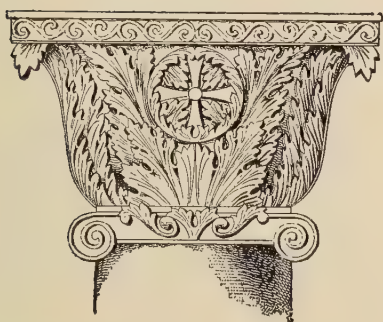
19. Roofs.—Flat domes and semi-domes constructed of pumice stone and bricks were freely used as roof coverings to Byzantine buildings. In most of the earlier examples the dome proper commenced immediately above the top of the pendentives, but



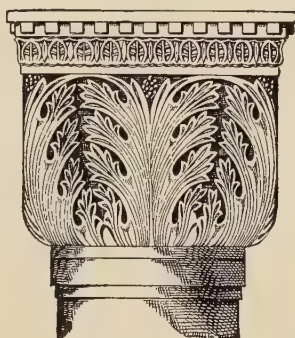
(a)



(b)



(c)



(d)



(e)



(f)

FIG. 11



(a)



(c)

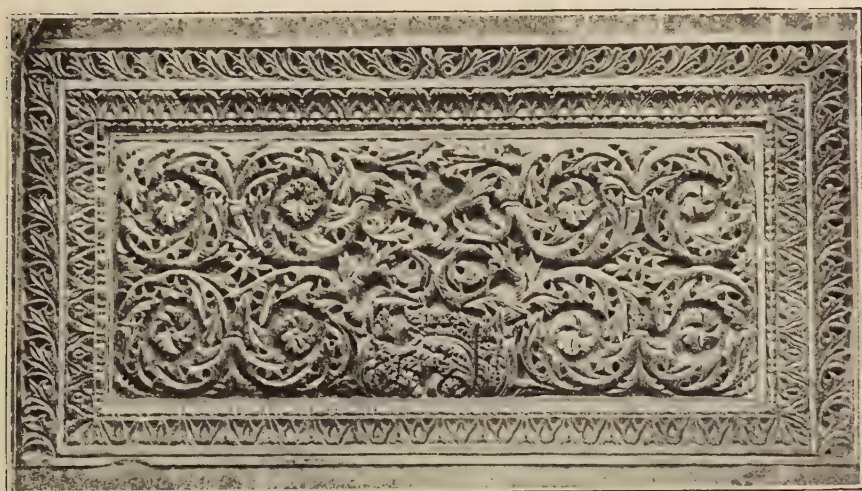


(b)

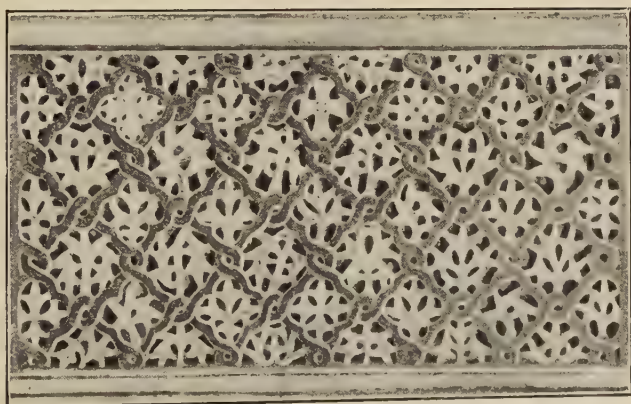
FIG. 12



(a)



(b)



(c)

FIG. 13

in later buildings a drum, pierced with windows, was placed between the constructional archways that carried the dome and the dome itself.

20. Openings.—The openings for the doors and windows were almost always semicircular headed and the archways round in form. Elaborately ornamented doorways were common features of Byzantine buildings. The small window openings were often grouped together under a large arch, but the principal lighting of a Byzantine church usually came from a range of windows encircling the lower part of the central dome, as in Fig. 4 (*a*).

21. Columns.—The openings between the columns of arcades were spanned by semicircular arches terminating on the abacus of the capital, which was often specially designed to present the appearance of a weight bearing block, as illustrated in Fig. 11 (*b*) and (*d*) and Fig. 12 (*a*) and (*b*). Monolithic columns were freely used as decorative features, but they show great divergence from the classic type, especially in the treatment of the capitals, of which there are many varieties. Among these are the bowl-shaped and voluted capital, Fig. 11 (*a*), (*b*), and (*c*), which was either covered with a network of foliage or relieved by fretted carvings, *basket* capitals which were covered with interlacing bands, and capitals carved with acanthus or vine leaves, as Fig. 11 (*d*), and other foliage. The capital at (*a*) is from St. Sophia, and that at (*c*) from St. Mark's. In Fig. 12 the capital at (*a*) and the columns at (*b*) are details from St. Vitale at Ravenna.

22. Mouldings.—The mouldings were of a simple nature and possessed few distinctive features. As a rule they consisted of free adaptations of classic forms from which all the refinements of the originals had disappeared. The entablatures of Greek and Roman architecture were never used in Byzantine work.

23. Ornamentation.—The geometrical arrangement of Byzantine ornamentation, which in the general delicacy of its workmanship is more suggestive of Greek and Oriental than of Roman influence is well exemplified in the stone panels illustrated in Figs. 13 and 14. Of these the pierced panel from Ravenna, shown in Fig. 13 (*a*), contains several of the usual characteristics

of Byzantine ornamentation. The central cross, the interlacing geometrical patterns, and the filling-in, consisting of birds and foliage of this example, are specially noteworthy. Fig. 13 (*b*) is from a panel at St. Mark's, Venice, but in this instance the carving, in high relief, is treated with much more freedom and the flowing lines of the foliage and other details of this panel are reminiscent of the decorative work of classical times. On the other hand, the panel illustrated in Fig. 13 (*c*) is purely Byzantine in its treatment; Greek influence is apparent in Fig. 14 (*b*), where the classical fret and guilloche ornamentations surround a central cross. This beautifully designed panel is from the basilican church of St. Apollinare at Ravenna. The panel, shown in Fig. 14 (*a*), from St. Mark's, at Venice, is one of an altogether different type of design and its crudely arranged conventional vine foliage is anything but suggestive of Greek refinement.

24. Two characteristic types of Byzantine carving appear in Fig. 11 (*e*) and (*f*). The former shows a conventional treatment of acanthus leaves arranged as a running enrichment and the latter, which is from the church of Santa Sophia, a geometrically planned design in which interlacing circles and the symbolic cross are prominent features. An example of one of the many beautifully carved well heads of Venice appears in Fig. 12 (*c*), while (*b*) of the same figure illustrates a balcony from St. Vitale, which is chiefly noticeable for the extremely delicate carving of the network capitals.

25. The coloured decoration of the mosaic worker was a conspicuous feature of Byzantine art. It was used to enrich the walls, floors, vaults, and domes of the interior and was also sometimes applied to the exterior of a building. Figures, architectural forms, geometrical patterns, and conventional foliage were wrought in mosaic on a background of gold and resulted in a gorgeous and permanent form of embellishment unattainable by other means. Examples of Byzantine mosaic borders arranged in simple geometrical patterns are shown in Fig. 15 (*a*), (*b*), and (*c*). A scheme of wall decoration, gold on a buff background, is seen at (*d*) and another with gold relief at (*e*).



(a)



(b)

FIG. 14



(a)



(b)



(c)



(d)



(e)

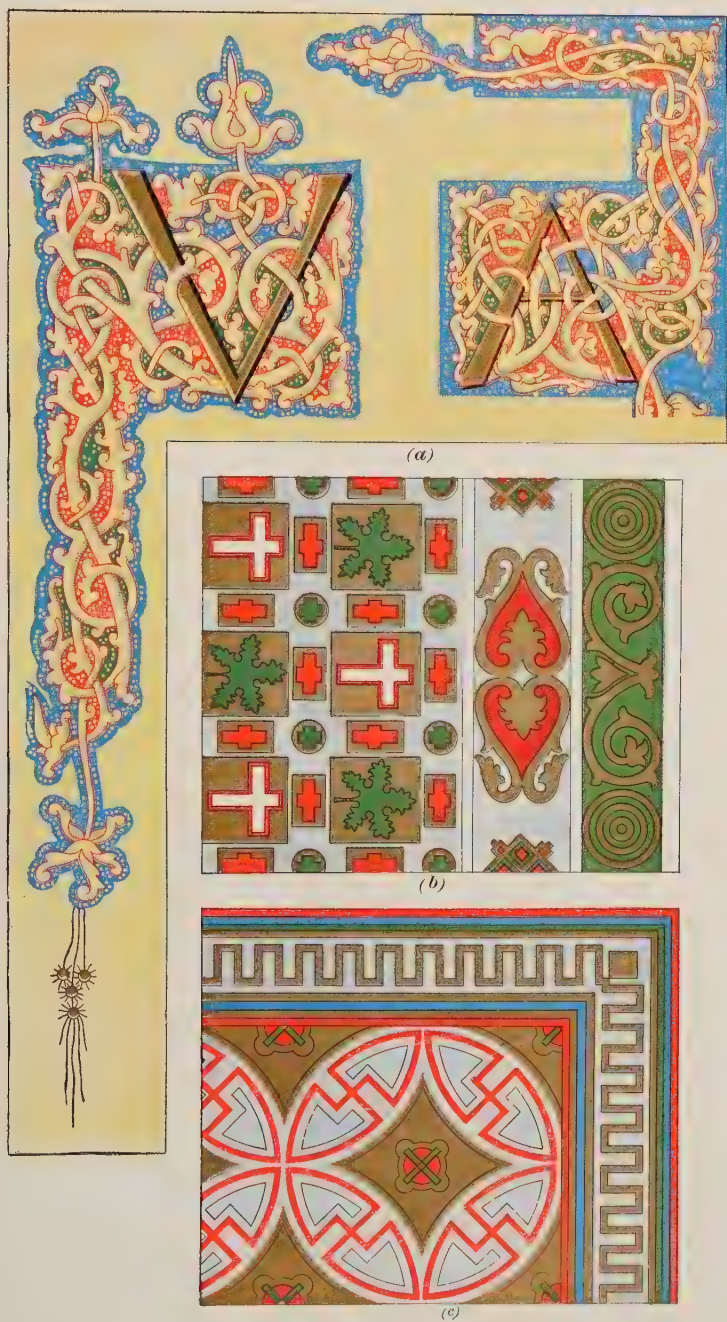


FIG. 16

26. Other examples of Byzantine ornamentation are shown in Fig. 16, of which (a) is one of the many beautifully executed designs for illuminated manuscripts, (b) an example of wall decoration from the church of St. George of Thessalonica, and (c) a coloured ceiling from the same building.

THE MIDDLE AGES

HISTORICAL NOTES

MIGRATION OF NATIONS, FEUDAL SYSTEM, AND CRUSADES

27. **Period of the Middle Ages.**—The period known to historians as the Middle Ages may be said to extend from the fall of Rome, in A.D. 476, to the capture of Constantinople by the Turks, in A.D. 1453. Six of the ten centuries included in this era are sometimes called the Dark Ages, but the period that followed the brilliant light of Roman civilization was more in the nature of a transition than one of actual darkness; and in the last four centuries of the Middle Ages, during which wandering tribes developed into nations, learning revived and civilization began to resume its sway. The varying national boundary lines at different periods during the Middle Ages may be studied in detail by referring to the four maps contained in Fig. 17.

28. **Principal Events.**—Among the notable events of the Middle Ages are: (1) the migration of nations; (2) the Saracenic invasion; (3) the establishment of the Frankish kingdom of Charlemagne; (4) the institution of the feudal system; (5) the Crusades; (6) the supremacy of the papal power; and (7) the rise of modern nations.

29. **Commencement of the Migrations.**—Toward the end of the fourth century a series of invasions, known as the migration of nations, was commenced by the Huns. This tribe, of Mongolian origin, had overcome the Goths, and occupied Southern Russia, Poland, and Hungary. Under their leader, Attila, they devastated

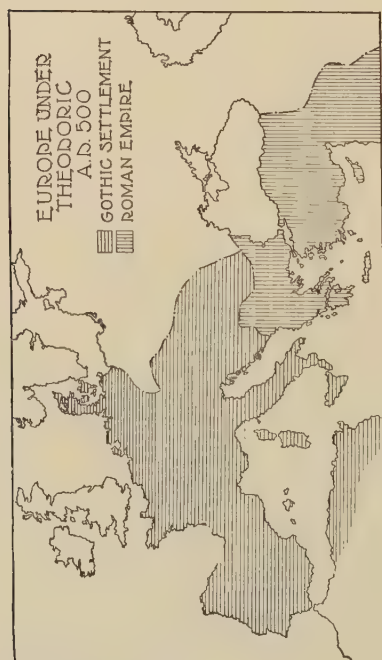


Fig. 17

Roman territory, and their example was followed by other tribes, such as the Vandals. The Ostrogoths from the East, and the Visigoths from the West, among whom were the Franks and Burgundians, also poured into Europe.

30. Vandals and Goths.—In A.D. 400 the Vandals crossed the Rhine, the Rhone, and the Pyrenees into Spain, whence they migrated to Africa and there founded a kingdom which was destroyed by the Byzantine Empire in A.D. 535. The Visigoths and the Ostrogoths first appeared about the year 330. Under Alaric the former tribe invaded Greece, pillaged Rome in A.D. 410, conquered France and Spain, and ultimately became partially civilized. Their power declined as that of the Franks advanced, and they were finally overcome by Clovis in A.D. 507.

31. Invasion of Gaul.—Roman territory was also frequently invaded by the Ostrogoths, who were severely defeated by the Romans in A.D. 386. The Ostrogoths joined Attila and his Huns in their expedition against Gaul, or Gallia, which included Northern Italy, France, Belgium, and part of Holland, Switzerland, and Germany, and those who survived the great battle of Chalons, A.D. 451, after ravaging Eastern Europe, founded a kingdom in Italy which lasted from A.D. 493 to 553, when it was conquered by Justinian.

32. The Merovingian Dynasty.—Originally settled on the Oder and the Vistula and afterwards on the Rhine and the Neckar, the Burgundians, in company with the Suevi and Vandals, invaded Gaul in A.D. 407, and, afterwards embracing Christianity, unsuccessfully opposed the expedition of Attila. In 534 the Burgundians were absorbed by the Franks. The latter race came from Frankonia in Germany, and, led by their King Clovis, conquered the Romans in 486 and took possession of the country between the Seine and the Loire. In A.D. 507 Clovis defeated Alaric, extended his kingdom from the Loire to the Pyrenees, and established the Merovingian dynasty at Paris, which became his capital.

33. The Saxons.—Another tribe, known as the Saxons, also took part in the great migration. The territory they acquired

was northward of that of the Franks, with whom they were in constant conflict until their final overthrow by Charlemagne. A branch of the Saxon tribe crossed the Channel and conquered a large part of Britain.

34. Romance Languages.—In Gaul, Spain, and Italy, the Teutonic rulers of the Roman Empire became partially civilized and, gradually blending with the native population, adopted the laws, civilization, and Christian religion of the conquered Romans. New languages of Roman origin, known as the *Romance* tongues, namely, French, Spanish, and Italian, were evolved. But Latin continued to be used in writing and, awed by the prestige of the ancient Empire of the West, the Gothic and Germanic kings were proud to assume the manners and customs of their conquered foe.

35. Anglo-Saxon Language.—In Britain, however, the Anglo-Saxon conquerors showed no respect for Roman civilization, and enslaved or drove back the native survivors of the invasion. The Anglo-Saxon invaders neither adopted the Roman language nor the Roman religion, for Christianity was introduced into Britain at a later date, and the English language of to-day remains essentially as it was when first brought into this country by our Saxon forefathers.

36. Byzantine Empire.—Meanwhile the Eastern, or Byzantine, kingdom was governed by weak rulers until the time of Justinian, A.D. 527, who won back a considerable portion of the lost empire, destroyed the power established by the Vandals in Africa, invaded Italy, and captured Rome. Italy, thus reunited to the Eastern Empire, was governed from Constantinople through local rulers called Exarchs of Ravenna. Justinian condensed the old Roman laws into a code which still forms the basis of the civil law of Europe.

37. The Lombards.—After the death of Justinian, Italy was overrun by a fierce Germanic tribe known as the Lombards. From the Italian plain, which still bears their name, they governed the country, conjointly with the Exarchs of Ravenna, for about 200 years.

38. Growth of the Papacy.—The Christian Church succeeded in maintaining its organization and power during three centuries of political change and confusion. Through the successive conversion to Christianity of barbarian rulers the *Papacy*, as it came to be known, the term being derived from the Latin word *papa*, a bishop, continually gained strength. The people, who, until the overthrow of the Emperor, had been accustomed to look to Rome for material support, now turned thither for spiritual guidance, and the Bishop of Rome became the head of the Catholic Church. But the Patriarch of Constantinople also claimed pre-eminence for his See, and it was chiefly on account of the constant quarrels between the two bishops that the Eastern, or Greek, Church ultimately separated from the Western, or Roman.

39. The Saracenic Invasion.—Early in the seventh century an Arabian reformer named Mahomet, or Mohammed, taught a new religion, the substance of which was “There is but one God and Mahomet is his prophet.” Converts were made by force of arms. Death or the acceptance of the *Koran*, the sacred book of the Mohammedans, was the only choice given to the vanquished. Before the close of his stormy career, in A.D. 632, the warrior-prophet had subdued the scattered tribes of Arabia and united the people in one nation and one religion.

40. The successors of Mahomet, known as the Caliphs, followed up the early triumphs of the founder of their faith. Syria, Palestine, and Egypt were conquered, Persia subdued, and the *Saracens*, under which name the Arabs were now known, more than once appeared before the walls of Constantinople, which, however, they were unable to capture. In 711 the Saracens crossed the Straits of Gibraltar and established a *Moorish* or Saracenic kingdom in Spain which lasted until the year 1492. But in attempting the conquest of Gaul, in 732, the Saracen hosts met the Franks, under Charles, henceforth known as Martel (the hammer), on the plain of Tours where, after a stubborn contest, the Cross triumphed over the Crescent; the Moslems retreated behind the Pyrenees, and Europe and Christianity were saved. In this stubbornly contested battle the flood of Saracenic conquest received its first check.

41. Exactly a century after the death of Mohammed Saracenic dominion extended from the Indus to the Pyrenees, and was larger than any power of antiquity. For a time the unwieldy empire held together, and the word of the Caliph was obeyed alike in Sinde and Spain. But later, owing to disputes concerning the succession, the extensive dominion of the Saracens was divided between the descendants of Omar (*Ommiades*) who reigned at Cordova, and the *Abbassides* who governed from Bagdad. Thus, in the year A.D. 800, when Charlemagne was crowned at Rome, there were two rival Christian Emperors, one in Rome and one in Constantinople, and two rival Caliphs.

42. **The Feudal System.**—While the government of ancient Rome had sometimes granted lands on condition of military service, the Franks were accustomed to regard a warrior chief as their personal lord and master. From these two customs a new system grew up, called *Feudalism*, by which society and politics throughout Europe were influenced for centuries. The feudal system was founded on the assumption that the territory of a conquered ruler became the absolute property of the conqueror, and, as such, could be partitioned by the latter in any manner he chose. It therefore gradually became the custom for a victorious potentate to appropriate a large share of his victim's domain to himself, and to divide the remainder among his principal military commanders to be held by them during their lives.

43. Under this arrangement the great chiefs became the king's supporters, or vassals, and not only were they forced to render services to their immediate lord but, if he in turn were in like manner bound to some higher ruler, their services were also at the disposal of their lord's superior. Subject to modifications, as the power of the over-lord became weak or that of the vassal strong, in which case the estates of the latter became hereditary, this was the system followed in the governments of the kingdoms founded by the Huns, Goths, Vandals, Franks, and Lombards, and which was destined to remain in existence for some hundreds of years. Behind the solid walls of the lord's castle his vassals of the neighbouring village found protection in times of danger,

and so, in the Middle Ages, civilization became individualistic and varied and thus materially differed from the ancient idea of the exaltation of the nation. Three distinct classes of society were formed, namely, the governing classes, consisting of the warrior landowners, the monks, who preached, studied, and taught, and the productive class.

44. The Crusades.—Fear of a general Mohammedan advance against Christianity was instrumental in bringing about the Crusades. In 1095 the Turks, who were already masters of Asia Minor, threatened to conquer and destroy the Greek empire and a holy war was preached against Moslem aggression by Pope Urban II at Clermont. But this religious spirit aroused throughout Christian Europe, more especially in France, gradually gave way to other motives, and in the Fourth Crusade, 1204, the Christian city of Constantinople was stormed and devastated by Crusaders.

45. The Age of Chivalry.—The institution known as **Chivalry** dates from the time of Charlemagne when some of the superior feudal tenants, called *Caballarii*, were first mounted and equipped with coats of mail for service in the field. Thus, the order of knighthood grew out of Feudalism. It required a knight to be loyal to his superiors, liberal to his dependents, and courteous and just to all. Its usages were formed into a system of military education and its tenets upheld by the magnificent tournaments and pageantry of the Middle Ages. From it sprung the various military religious orders, such as those of the Knights of St. John of Jerusalem, or Knights of Malta, the Knights Templars, and others.

46. Summary.—Historically the period of the Middle Ages may be thus roughly summarized. In the fifth and sixth centuries came the settlement of the Teutonic races in the Roman Empire. The seventh century was remarkable for the rise of Mahomet and the foundation of the Saracenic Empire; and the eighth century for the growth of the kingdom of the Franks and the Empire of Charlemagne. In the ninth century Egbert became the first king of England, and the partition of Charlemagne's Empire resulted in the national development of France,

Germany, and Italy and the founding of Russia by the Normans. The tenth century saw Rollo in Normandy and Capet in France, while the eleventh century was memorable for the Norman conquest of England, the overthrow of the Greek-Saracen rule in Southern Italy, and for the commencement of the Guelf and Ghibelline feud in Germany. In the twelfth century the Crusades were at their height and the Italian Republics had become powerful. The thirteenth century was notable for the granting of Magna Charta in England and for five Crusades, the fourth to the eighth inclusive, and the fourteenth century for the Hundred Years' War. During the fifteenth century England lost her French possessions, Granada was conquered by Spain, Constantinople taken by the Turks, and America discovered by Columbus.

MOHAMMEDAN ARCHITECTURE

HISTORICAL NOTES

ADVANCE OF MOHAMMEDAN RELIGION AND ART

47. Growth of the Mohammedan Empire.—Early in the seventh century when the Byzantine Empire was at the zenith of its power an obscure Arab of lowly origin, named Mahomet, founded the new faith of Islam, which bound together the hitherto scattered nomadic tribes of Arabia. The sudden rise of Mohammedanism, dazzling in its rapid progress, is one of the most marvellous events in history, for at Mahomet's death in A.D. 632, the eleventh year of the Islamitic era, the entire Arabian peninsula was united under one crown and under one religion. Within an incredibly short time Palestine, Syria, and Mesopotamia were conquered, Persia, Egypt, and Africa added to the Arab kingdom, and Spain had become a dependency of the new empire.

48. Check of Mohammedan Advance.—In A.D. 731 all France south of the Loire was conquered; but in 732 the hitherto invincible Arabs were defeated at Tours by Charles Martel and

fled never to return. Pepin, son of Charles, freed France from the last trace of Mohammedan rule. Spain, however, remained an Arab dependency for more than five centuries and Sicily, Candia, Cyprus, Rhodes, and Malta, in turn, were added to the Arab Empire, which in A.D. 755 comprised Africa, almost the whole basin of the Mediterranean, and immense Asiatic possessions.

49. Conquest of India by the Mohammedans.—The centre of government, originally at Damascus, was changed to Bagdad where, at the end of the eighth century, Arab civilization was at its best. But shortly afterwards the Arab Empire was broken up into a number of separate states, and eventually Egypt, Syria, Persia, and Asia Minor were occupied by the Turks. At the commencement of the eleventh century the Mohammedans, under Mahmoud of Ghazni, annexed the northern part of India, and in the sixteenth century the Mongols, under the leadership of Babar, invaded and occupied the northern and central portions of India over which they ruled for more than two centuries.

50. Fall of Moorish Kingdom.—The independent Khalifate of Cordova had been established in Spain by Arabs from Morocco, or Mauretania, from which the name Moors was derived, in A.D. 710, but the Moorish kingdom, thus formed, was afterwards divided into petty kingships, such as those of Granada, Seville, Toledo, etc. The dominion of the Moors in Spain, which lasted 782 years, came to an end in A.D. 1492.

51. Subjection of Balkan States by Turks.—Starting their career of conquest in Bythinia, in 1299, the Seljûk Turks had long been in occupation of a large portion of Byzantine territory when in A.D. 1453 they succeeded in taking Constantinople and overthrowing the empire of the East. The subjection of the Balkan States followed and in the seventeenth century attempts were made to extend the Turkish rule to Hungary and Austria.

52. Effects of Arab Civilization.—Arab civilization recalls the tyrannical form of government of the extinct civilizations of the East. The adoption of a religion, in many respects a great advance on that of the heathen races, but which is opposed to

the free development of intellectual faculties, caused Mohammedan civilization to become one of a superficial nature. Founded in a measure on that of China and India, Arab power for a considerable period filled an important position in the history of civilization. Through its influence the countries of the East were revived while Spain became prosperous. The Mohammedan religion has taken absolute possession of the people by whom it has been accepted, and it is still practised by nearly two hundred millions of mankind.

53. Local Characteristics of Mohammedan Architecture.—Mohammedan architecture, which followed in the train of Mohammedan conquest, has many local characteristics differing according to the diversities of climate, materials, and native art of the various countries conquered and absorbed. However, in its main methods of construction, forms of arches, pillars, and cupolas, Arab art, whether exemplified in the Mohammedan buildings of India, Egypt, Spain, or Persia, bears the unmistakable impress of its originators.

54. External Influences.—Nearly all the developments of Arab art occurred through the influence of the people, absorbed by Mohammedan conquests, who grafted some of the characteristics of their own ancient art on that of their conquerors. For example, in Arabia, the home of the Arabs, the great mosque at Medina, which dates from the beginning of the eighth century, is a building of the simplest character. It consists of a court and central fountain for ablutions, a hypostyle hall for prayer, and a recess for the sanctuary. But in Syria and Mesopotamia, Persian, Byzantine, and Sassanian influences appear in the Mohammedan buildings, and these influences are also found in the domed mosques of Damascus, and Jerusalem. The Sassanian period derives its name from the Sassanide, one of the last dynasties of ancient Persia, ruling from A.D. 226 to 642, and the influence of this dynasty predominates in Persian Mohammedan architecture in which the Mosque has no court and the cupola is raised over the sanctuary. Entrance doors are enclosed by immense pointed arches and minarets are cylindrical in form. Persia and Rome supplied many of the elements of Sassanian art.

55. In Turkey, Asia Minor, and the Balkan Peninsular early Mohammedan architecture was founded on Persian and Byzantine art, and the structural arrangement and plans of Byzantine buildings were generally copied by the Turks after the fall of Constantinople. The greatest of the Turkish mosques, the Suleimaniyeh, built by Soliman in A.D. 1553, has the Byzantine combination of half-domes and clerestories.

56. Arab art was developed in Egypt from the eighth to the fifteenth centuries. Cupolas were only raised over sepulchres and mosques containing tombs. The minarets varied in shape from stage to stage and pointed arches were sometimes surrounded by broad square-headed architraves.

57. **Arab Secular and Religious Buildings.**—Many excellent examples of Arab art are to be found in Spain ; for example, in the castle fortress of the Alhambra, at Granada, the palace of Alcazar, and the Girlanda, or tower, at Seville, but its distinctive characteristics are best exemplified in the numerous mosques, or places of worship, erected by the Mohammedans in all countries over which their power extended. A mosque of the earliest period comprises an open court surrounded by cloisters arranged either in single or double arcades. The cloisters at the sides are widened and become of a double or threefold character, and those at the end of the courtyard, fronting the entrance, sometimes contain as many as six ranges of pillars and archways. It is in the wide cloisters of this portion of the building that the congregation, assembled for prayer, stands facing the end wall in which the sanctuary is placed. The sanctuary consists of a single niche, called the *Mihrâb*, marking the direction of Mecca and containing a copy of the Koran, or Moslem Bible.

58. **Minarets.**—Another form of mosque consists of a large central hall surmounted by a dome and surrounded by galleried aisles. This later type of mosque, which clearly shows the influence of Byzantine art, became almost universal in Turkey and Egypt after the fall of Constantinople. In course of time several *minarets*, or towers, or sometimes only a single high tower, from the top of which the call to prayer could be sounded over the city, became indispensable features of all mosques.

59. Diwans and Harems.—The architectural splendours of the palaces of the Caliphs and Emirs were internal rather than external, the various buildings of which they consisted being grouped round large courtyards, thus presenting an external aspect of almost unbroken walling. A *diwan*, or vaulted reception chamber, was raised slightly above the main internal court on which it opened and the *dar*, or men's court, was separated from the *harem*, or women's quarters. Fountains, fish ponds, and canals abounded in the large courts and gardens, and the principal apartments of the palaces were profusely enriched with polychrome and other ornamentation.

60. Indo - Mohammedan Architecture.—Indo - Mohammedan architecture may be divided into two periods, the first of which dates from the twelfth century and the later from the establishment of the great Mogul dynasty at Hindostan, in 1494 to 1706. Although less picturesque and not so dependent on colour decoration as either Persian-Mohammedan or Moorish structures, yet the Mohammedan buildings of India are far more monumental and dignified in appearance owing partly to the materials, chiefly marble and stone, used in their construction and partly to the influence of native art. While the dome, rising from the square plan, is in general use it is not found in combination with the Byzantine pendentives. Minarets and huge pointed archways are plentiful in Indo-Mohammedan buildings in which, however, the curious *stalactite* pendentives, formed of a series of representations of vaults, each of which overhangs the one below it, geometrical interlacings, and star panels, are rarely, if ever, seen.

ARCHITECTURAL EXAMPLES

MOSQUES AND PALACES IN EGYPT AND SPAIN

61. Mosque of Kaid Bey.—The Mosque of Kaid Bey at Cairo, built in A.D. 1469, is remarkable for its lofty portal consisting of a single cusped arch, Fig. 18. The elaborate character of the architecture of this building with its ornate dome and slender

minaret is in striking contrast with the simple nature of the earlier mosques in Egypt, comprising one-storied structures with flat roofs, that had neither cupolas nor towers.

62. Other Mosques in Egypt.—Of other mosques in Egypt that of Tulun at Cairo has a minaret with an outer spiral staircase



FIG. 18. MOSQUE OF KAID BEY, CAIRO

and the mosque of the Sultan Hassan, also at Cairo, is built in the form of a Greek cross with an open central court.

A cupola covering a mausoleum surmounts the arm of the cross containing the sanctuary.

63. Mosque at Cordova.—Built toward the end of the eighth and twice enlarged during the tenth century, the well-known mosque at Cordova consists, as seen from the plan, Fig. 19, of

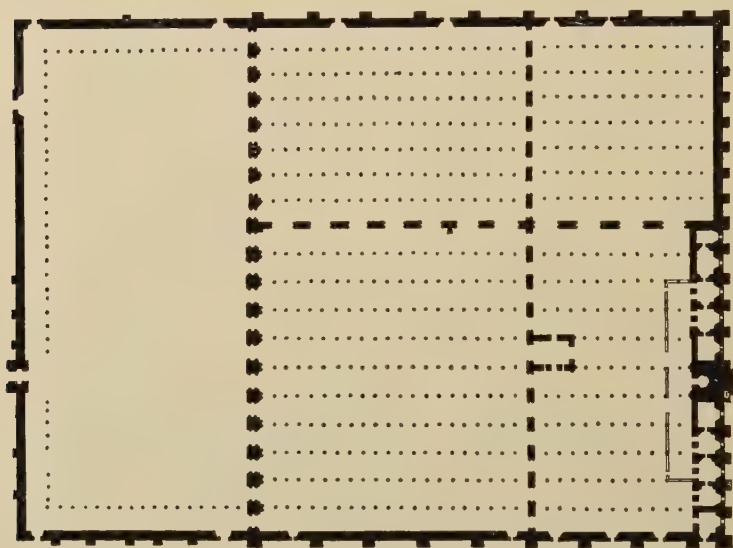


FIG. 19. PLAN OF MOSQUE AT CORDOVA

a huge rectangular building divided into nineteen parallel avenues separated from each other by arcades. The rich flat wooden ceiling is supported by horseshoe arches constructed in two ranges placed one above the other. An immense number of marble columns, said to have been taken from ancient classic buildings, carry the lower arches, as shown in Fig. 20, but as these columns are only 9 feet in height rows of square piers built above the abacus of the capitals and continued the whole height of the pillared hall, that is, 30 feet, were added to carry the top ranges of arches. The lower arches spring from column to column at the level of the top of the capitals.

64. The Alhambra.—The thirteenth- and fourteenth-century castle-fortress at Granada, known as the Alhambra, Fig. 21, is

an extremely interesting example of a Moorish palace. Its elaborately decorated halls and rooms are grouped round internal courts the larger of which are known as the Court of Myrtles and the Court of Lions. The former court takes its name from the hedges of myrtle which lined the sides of a large rectangular water basin, and the latter from the sculptured group of lions, forming



FIG. 20. ARCADE FROM MOSQUE AT CORDOVA

the base of the central fountain. Light arcades, beautifully enriched with delicate arabesque ornamentation, adorn the sides and ends of the principal courts, and the Arabic stalactite pendentives, the geometrical interlacings, and the star panellings found on the walls of the halls and minor rooms of this wonderful palace

are full of interest. Externally the Alhambra presents the appearance of a fortified building and as such it formed the last refuge of the Moorish king Boabdil prior to his final overthrow by Ferdinand and Isabella.

65. The Alcazar at Seville.—Another and somewhat earlier Moorish palace of the thirteenth century, the Alcazar at Seville,



FIG. 21. ENTRANCE GATEWAY, ALHAMBRA, GRANADA

of which an interior view is shown in Fig. 22, has most of the decorative features of the Alhambra, and the Giralda or tower at Seville. The latter, a magnificent minaret, Fig. 23, is a lofty and richly ornamented rectangular tower. Its present upper

stage, added in A.D. 1568, belongs to a different style of art, but the elaborately panelled and diapered walling of its lower part

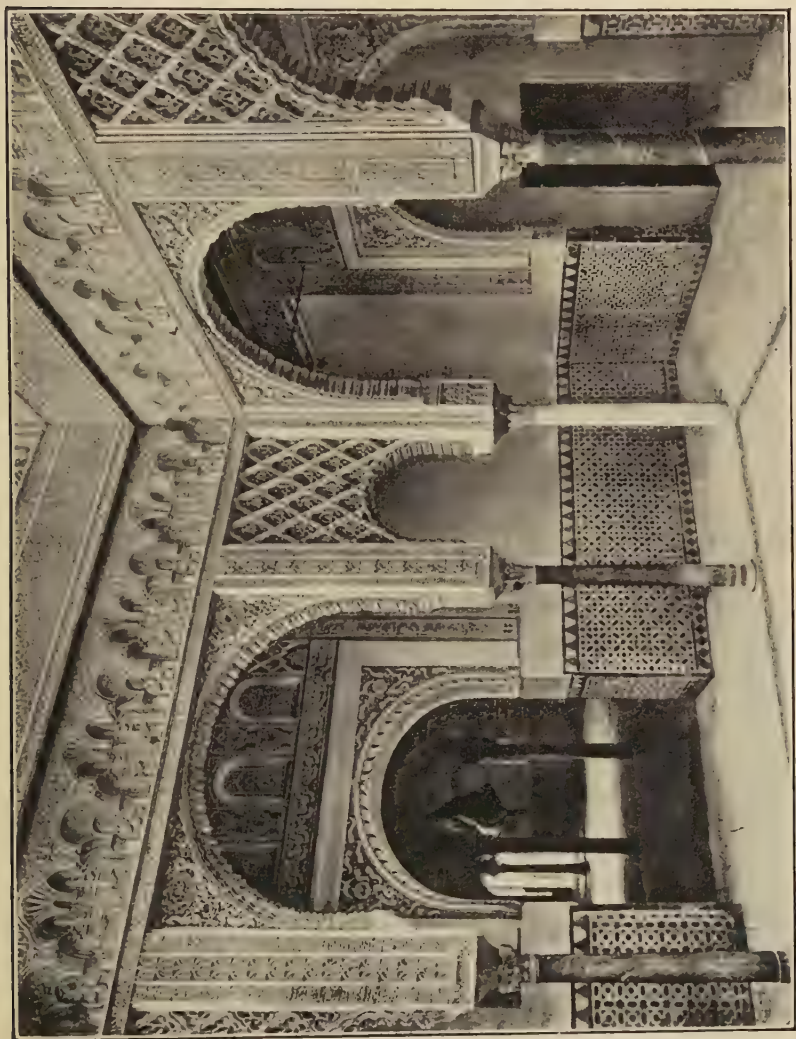


FIG. 22. INTERIOR FROM ALCAZAR, SEVILLE

is an almost unique example of Moorish architecture. The plan of the Giralda forms a square the sides of which are

about 45 feet in length and the tower rises, without diminution in section, to a height of 185 feet. The upper stage extends to an additional height of 90 feet.

MOSQUES AND MONUMENTS IN INDIA

66. The Tower of the Kutab at Delhi.—Among the earliest examples of Arab art in India is the great tower of the Kutab in ancient Delhi, an immense cylindrical-shaped monument of five balconied stories, built in diminishing stages and decorated with ornamental bands of geometrical figures. This monument was commenced in A.D. 1199.

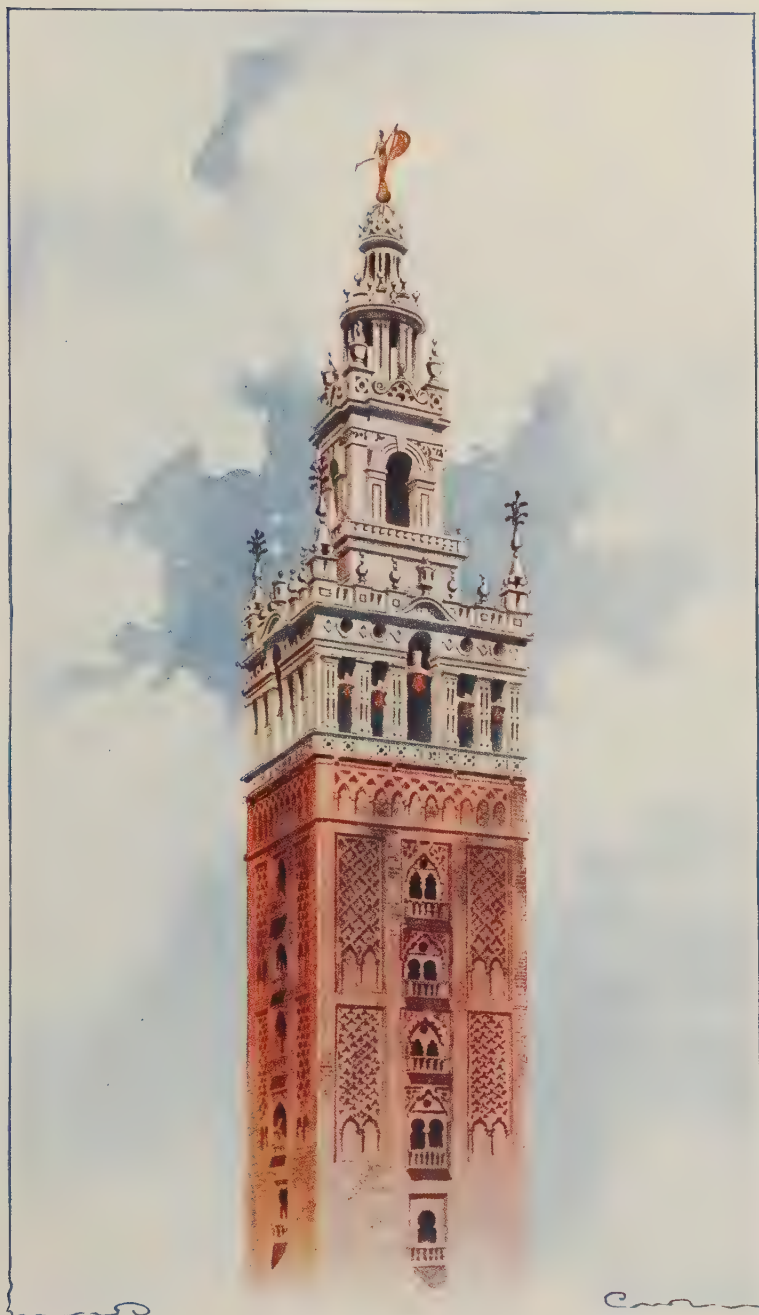
67. Mosque of Akbar.—The later, or Mogul, period of Indo-Mohammedan art is exemplified in the immense Mosque of Akbar, erected at Futtehpoore, Sikhri, between the years 1556 and 1605 in a style of the utmost magnificence. Its porch or gateway, practically an isolated building, is illustrated in Fig. 24.

68. Mosque and Mausoleum at Agra.—Some of the finest and most famous of the Mogul monuments are found at Agra. These include the mosque known as the Pearl and the Taj Mehâl, a mausoleum built about the middle of the seventeenth century by the emperor Shah Jehan. It consists of a large square structure dominated by a marble dome some 60 feet in diameter and 80 feet high, round which are four smaller domes or cupolas. The building occupies a central position in a spacious raised court constructed on a platform 18 feet in height. Four minarets rise from the angles of the court, which, arranged as a garden, is embellished with numerous marble basins.

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

69. Plans.—Arab buildings of an early period, whether mosques, palaces, or houses, were usually planned to open into a large internal court, which thus became a characteristic feature



of Mohammedan architecture. The arrangement of the court when applied to the palace and to the mosque has already been described in Arts. 57 and 59, respectively ; its application to



FIG. 21. MOSQUE OF AKBAR, INDIA

the plan of a dwelling house will be understood on referring to Fig. 25, which shows the internal courtyard and the exterior of the adjoining rooms that receive their light from it.

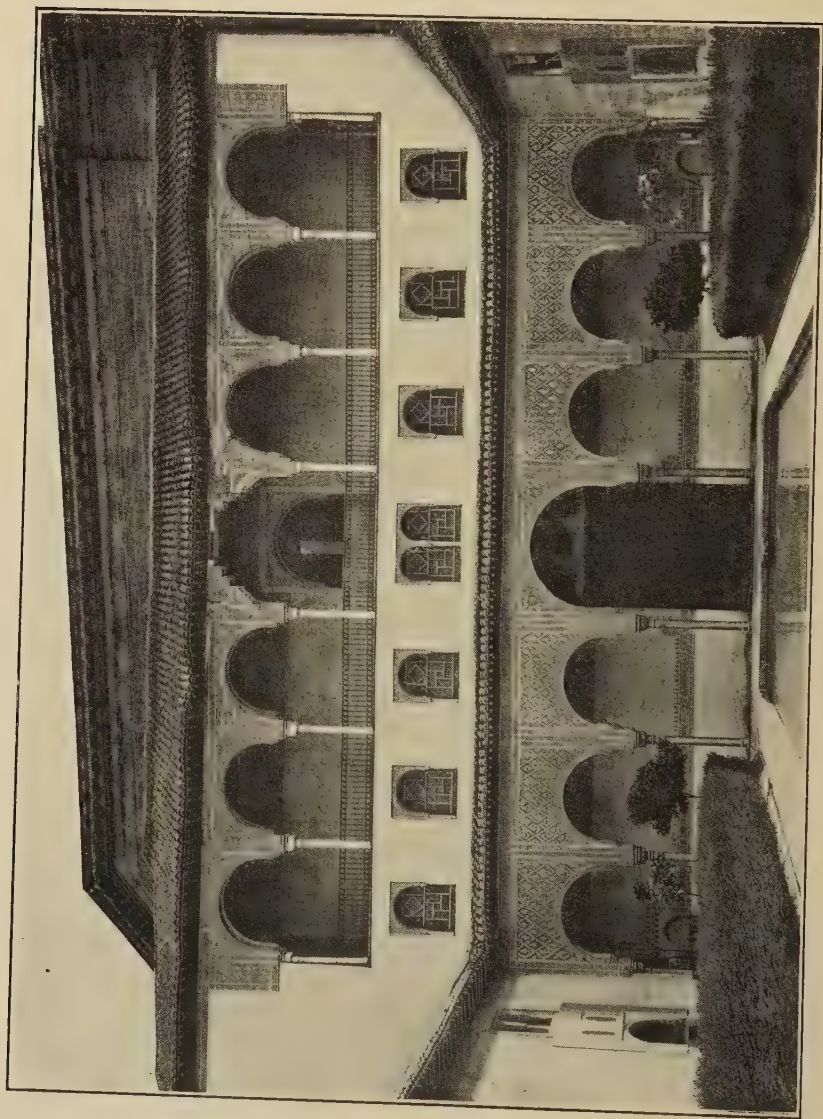


FIG. 25. COURT OF MYRTLES, IN THE ALHAMBRA, SPAIN.

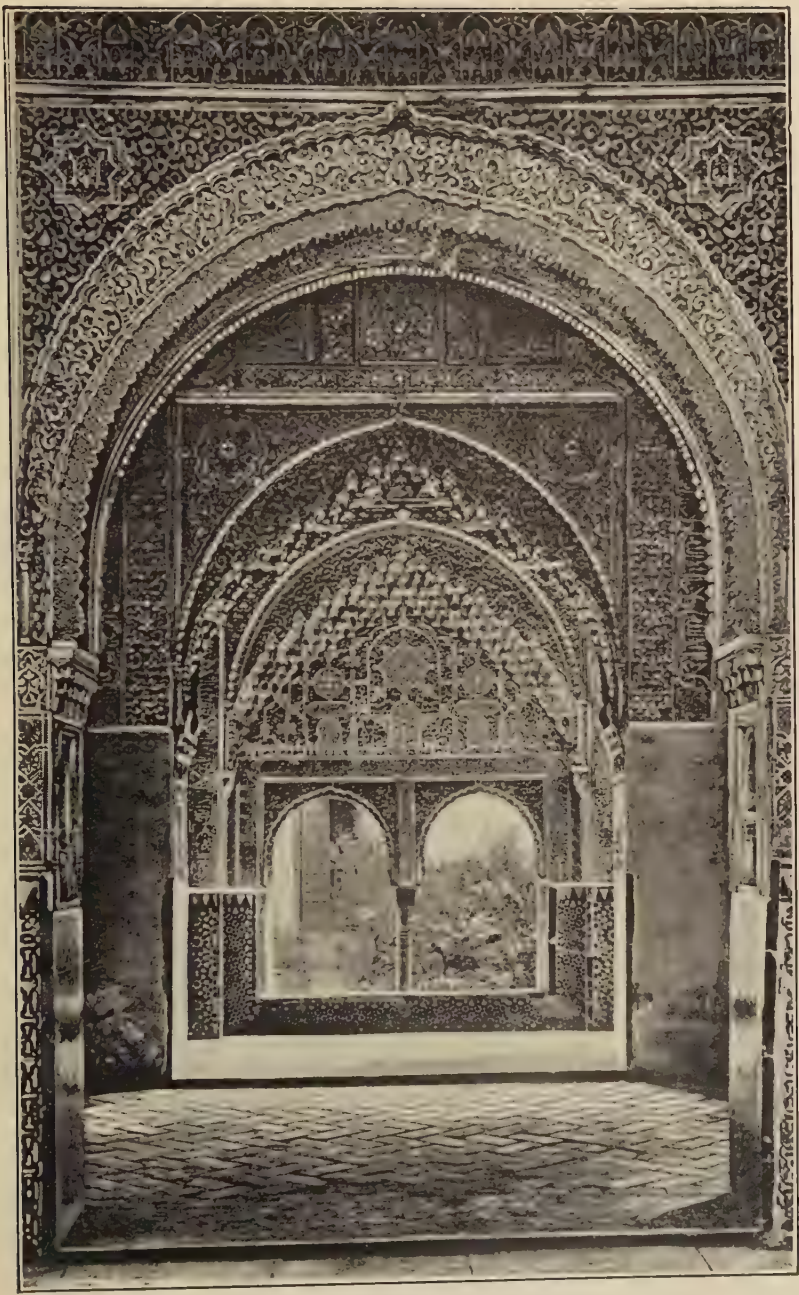


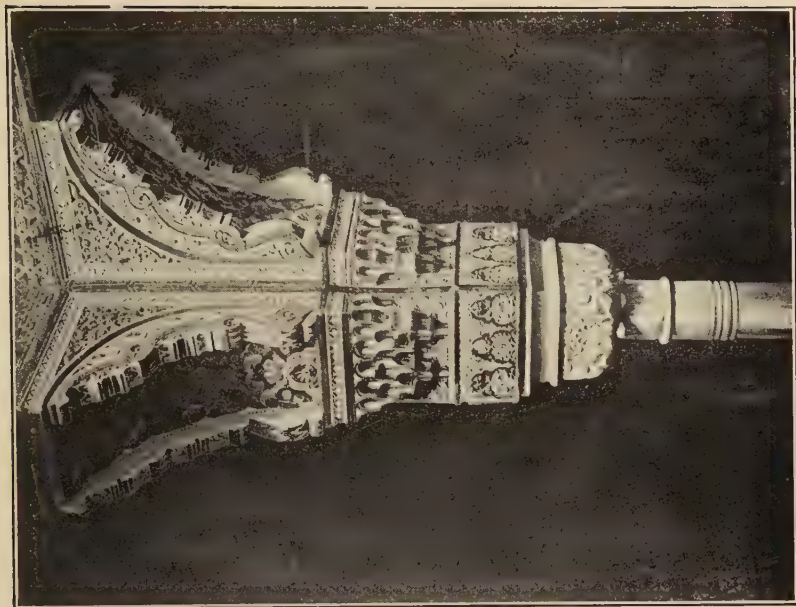
FIG. 26. INTERIOR FROM ALHAMBRA, GRANADA

70. Walls.—The brick or stone walls of Mohammedan buildings were usually ornamented both externally and internally. Outer walls were often relieved with alternate stripes or bands of white and coloured stone or by arranging the material used for the external facing in a decorative manner by the formation of numerous arched or other shaped panels, diapers, etc. The internal surfaces of the walls of Mohammedan buildings of all countries were lavishly decorated in colour with ornamentations of geometrical pattern worked in marble, enamelled bricks, tiles, or stucco. Fig. 26 is an interior view of the Alhambra where the walls are covered with a rich plaster decoration above a wainscoting built up of glazed tiles.

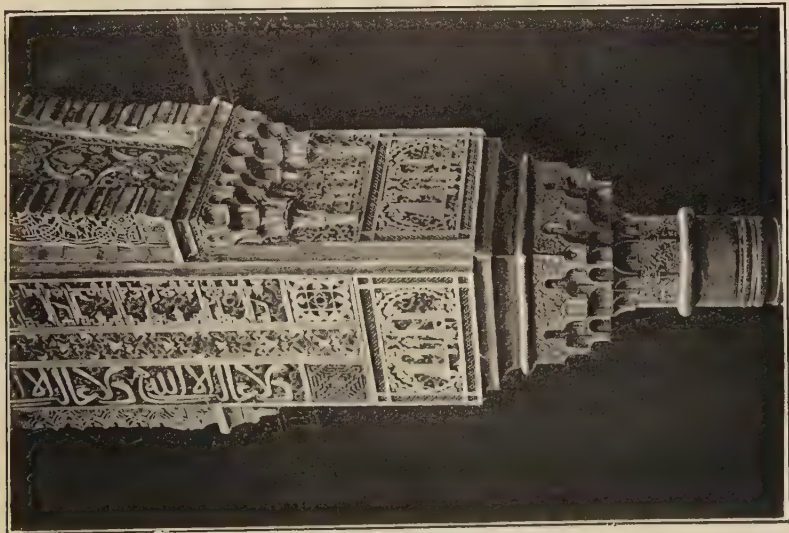
71. Roofs.—The flat roofs were constructed either of timber, brick, or tiles. Except where Byzantine influence prevailed, in which case the domes were hemispherical, the latter were either bulbous or conical in form and of brick or stone construction. Mohammedan domes were sometimes finished with brilliantly coloured glazed tiles or otherwise decorated, externally, with interlaced geometrical enrichments, as seen in Fig. 18.

72. Columns.—Wherever possible the Arabs used columns taken from ancient Classic buildings, but eventually columns were evolved the capitals of which often showed traces of Persian or Byzantine influence. A common type of column is that in which the lower corners of the cube-shaped capital are rounded. Capitals of this description have often a superimposed cushion. Examples of various capitals and columns are shown in Fig. 27 (*a*) and (*b*), Fig. 28, and Fig. 29.

73. Openings.—The window openings, usually small and unimportant, had arched heads of various shapes. Many of these openings were filled in with beautiful examples of geometrically patterned wood or marble grilles. Arches of various forms were used in Mohammedan architecture, including the round and pointed, which were usually *stilted*, as in Figs. 25 and 26, respectively, the horseshoe, Fig. 28, the foliated, or lobed, Fig. 29, the waved, or keel-shaped, Fig. 24, the triangular, and the interwoven, which consisted of various arches placed one above the



(b)



(a)

FIG. 27

other, as in Fig. 20. Examples of stilted arches, or those that spring from vertical additions above the capitals of the supporting columns, are shown in Figs. 22 and 26.

74. Mouldings.—The few mouldings used in Mohammedan architecture had no distinctive characteristics.



FIG. 28

75. Ornamentation.—Imitation of natural objects being forbidden by the Koran, the ornamentation of Mohammedan buildings is based almost exclusively on geometrical forms which the Arabs converted into an immense variety of decorative motives. Inscriptions from the Koran, in sinuous gold writing on a black ground, were also used for decoration. Wall surfaces, covered

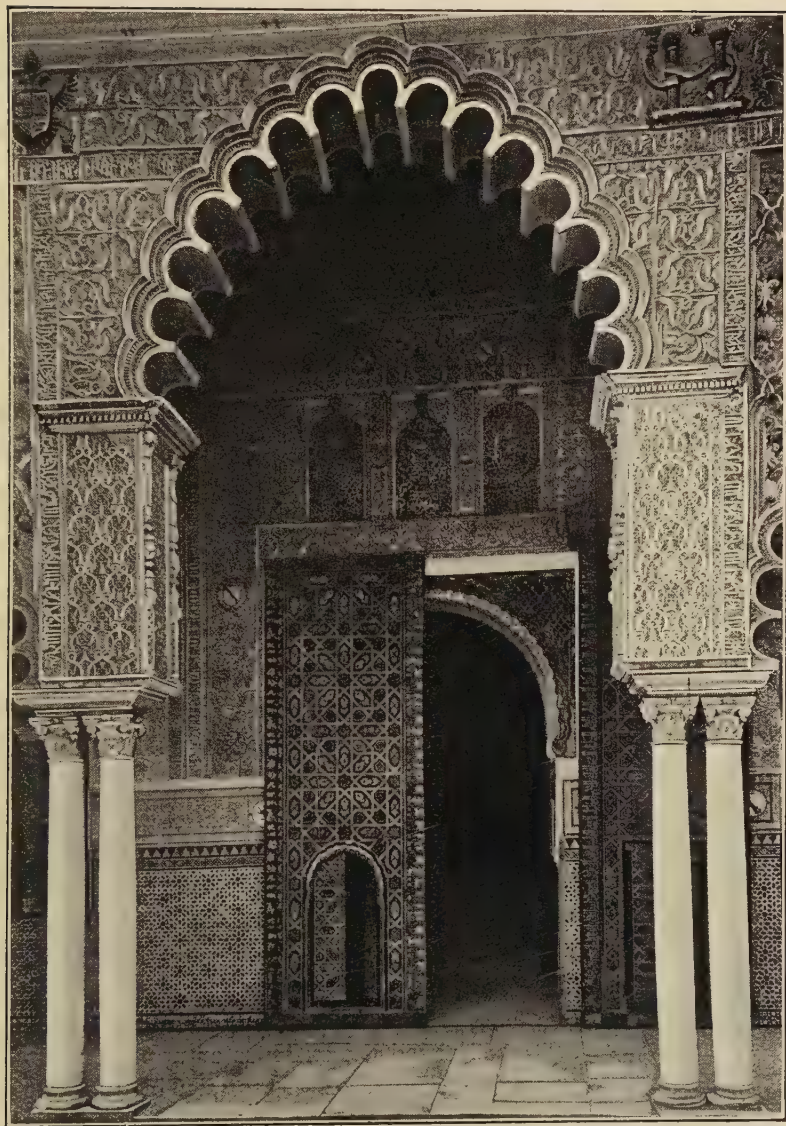


FIG. 29

with costly marbles, enamels, or blue and white tiles, combined brilliancy of colour with the intricacy of design developed from interlaced star and polygon patterns. Doorways were ornamented with stalactite corbellings and the voussoirs of the arches were cut into interlocking forms. Bands of ornament or small



FIG. 30

mouldings were continued round the extrados or upper portion of the arches of the doors and windows, as seen in Figs. 26 and 28, and the heads were often brought to a square form by two or three small cornice mouldings receding one within the other, see Fig. 24.

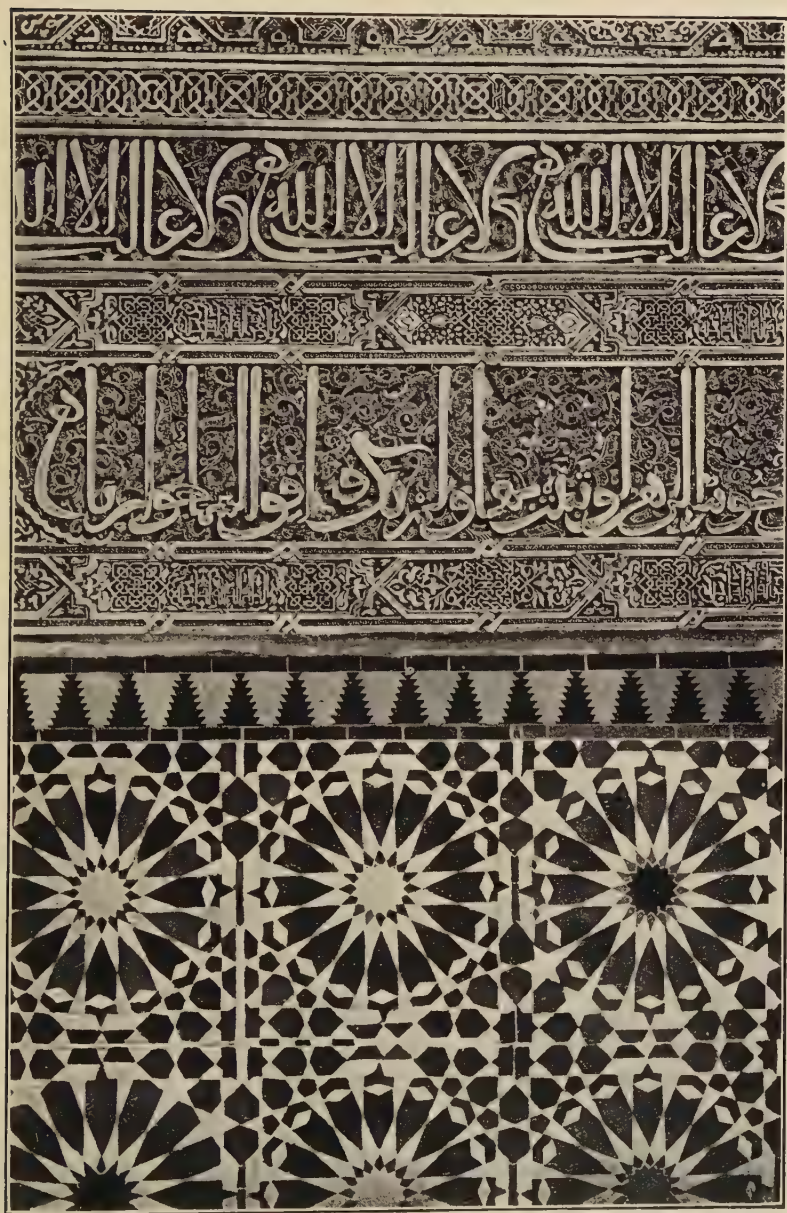
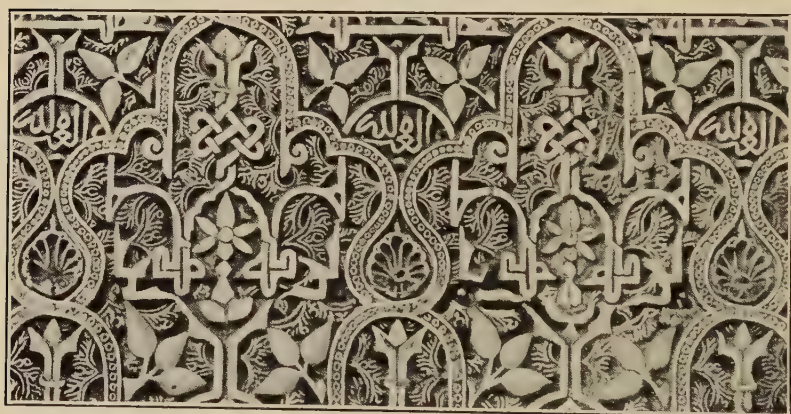


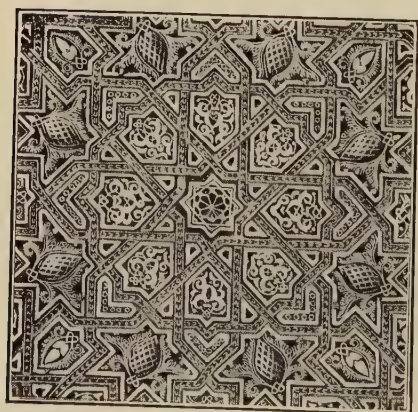
FIG. 31



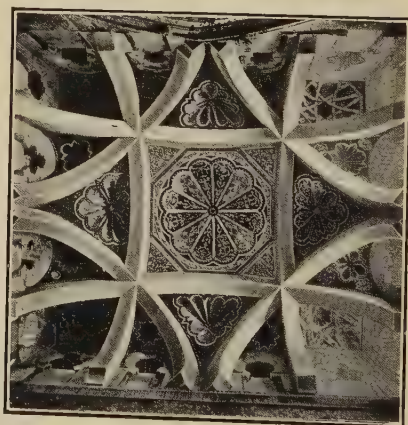
(a)



(b)

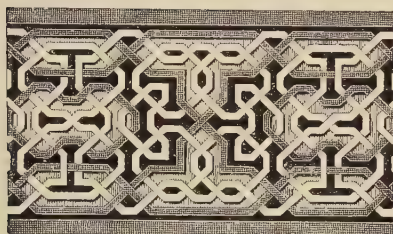


(c)

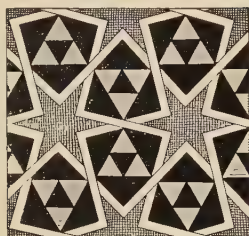


(d)

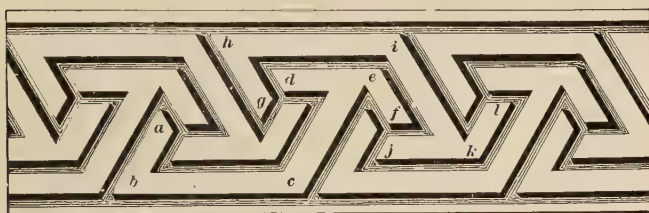
FIG. 32



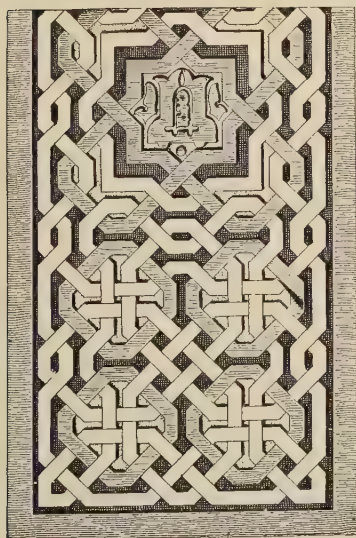
(a)



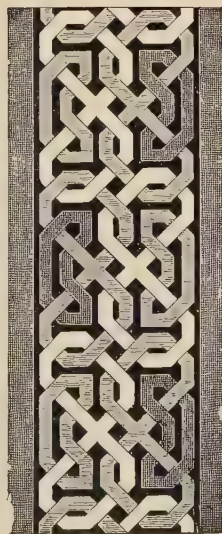
(b)



(c)



(d)



(e)

FIG. 33

76. In the interiors, in addition to honeycomb and stalactite ornamentations in the cornices, Fig. 22, niches, and cupolas, the ceilings were decorated in squares and various patterns formed by inlaid woods and all varieties of polychromic decoration were plentiful.

77. An example of a frieze decorated with quotations from the Koran is shown in Fig. 31. Diaper-patterned ornamentations in relief, combined with geometrical ground patterns are illustrated in Fig. 32 (*a*) and (*b*) and other characteristic examples of geometrical decoration at (*c*) and (*d*). The stalactite corbelling used in place of pendentives, afterwards applied as a form of ornament, is shown in Fig. 27 (*a*) and (*b*) as a decoration for the soffit of arches and for corbels and again in Fig. 27 (*a*) for the ornamentation of a capital. Various common forms of geometrical ornamentation formed of frets and interlacing bands are illustrated in Fig. 33 (*a*) to (*e*).

The lace-like ornamentation of the carved foliated doorway, shown in Fig. 30, is remarkable for the wonderful delicacy of its workmanship.

78. Some examples of Arabian colour decoration, usually executed in painted stucco, are given at (*a*) to (*d*) of Fig. 34. In each of these examples the ground of the pattern is red, the feather decorations either red or blue, and the prominent bands and scrolls are gilded. This form of ornamentation, which was always executed in low relief, was largely used for surface decoration, more especially in the palaces of the Moorish kings.

The often purely geometrical setting-out of the intricate patterns used in the ornamentation is shown at Fig. 35 (*a*) and (*b*), which also illustrates at (*c*) to (*n*) how the forms of rigidly idealized foliage were adapted to the creation of the rich combinations of intertwisted scrollwork, used either with or without geometrical figures, in *arabesques*, or surface decorations. The curved points of the leaves are specially characteristic of Arabian art.

Fig. 36 illustrates a richly decorated example of a cube capital in which the conventionalized foliage and scrollwork are varied by the insertion in the abacus of delicately carved geometrical patterns.



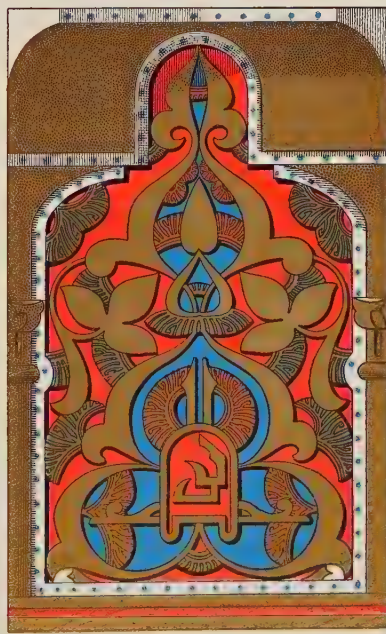
(a)



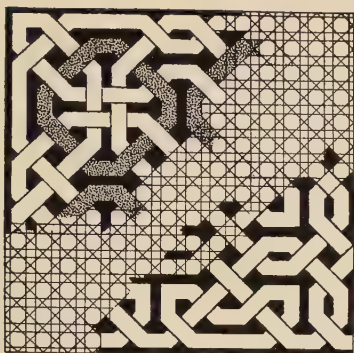
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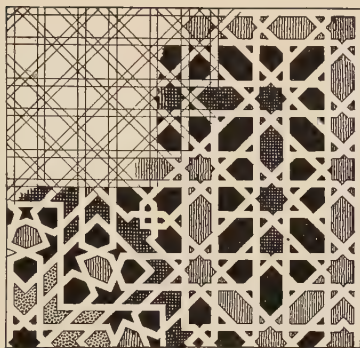
(c)



(d)



(a)



(b)



(c)

(d)



(e)



(f)



(g)

(h)



(i)

(j)



(k)



(m)

(n)



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FIG. 35



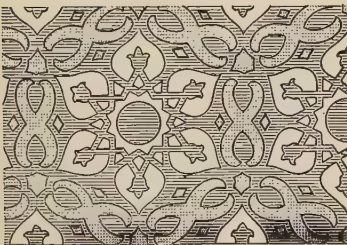
(a)



(b)



(c)



(d)



(e)

FIG. 38

ROMANESQUE ARCHITECTURE

DEVELOPMENT AND CHARACTERISTICS

INTRODUCTION

80. Definition of Terms.—The term *Romanesque* is often rather loosely applied to the various styles of architecture that flourished in Europe from the time of the destruction of the old Roman Empire until the commencement of Gothic art. Two of these phases, or styles, of architecture, Early Christian and Byzantine, have already been dealt with; the third, the *real* Romanesque style, was that in vogue practically throughout Europe for some 400 years after the coronation of Charlemagne in A.D. 800. In form, and in many of their general features, Romanesque buildings are reminiscent of Roman basilicas, and, in addition, the influences of Byzantine and Saracenic art are clearly discernible.

81. Early Romanesque Art.—From the sixth to the eleventh century the art of Europe was in a state of transition. During that period Celtic and Germanic races became Christianized and were thus brought under the control of the Church with the result that the later ecclesiastical architecture of the time shows traces of Christian, Roman, Byzantine, and Teutonic influences. Notwithstanding its common origin, the Carlovingian, or Romanesque, art of France, Italy, and Germany differed to some extent in each country, more especially in Italy, where Lombardic influence was paramount. But in all parts of Europe Romanesque architecture found expression in the massive walls, round arched openings, richly carved mouldings, and vaulted ceilings that marked the final development of the basilica plan.

82. Development of Romanesque Architecture.—The ever-increasing wealth, power, and influence of the Church, the desire to provide fitting shrines for the sacred relics collected by pilgrims, and the necessity of rebuilding in a more durable and solid manner the churches burnt during the pillaging raids of the dreaded Norsemen, all contributed to the development of Romanesque architecture in France and Germany. And the year 1000 saw French art, as exemplified in ecclesiastical buildings and sculpture, assume a very prominent position.

83. Principle of Balanced Thrusts.—Romanesque architecture was largely instrumental in bringing about the more general use of a hitherto somewhat neglected principle of construction, that of equilibrium, or the state of rest, produced by the mutual counteraction of two or more forces. The adoption of this scientific method of assuring the safety of a structure, in preference to that of obtaining the requisite stability by means of the dead weight of masses of masonry or concrete, led to a fuller appreciation of the value of the buttress or wall support in connection with arched structures. This system of construction also resulted in the eventual development, from massive Romanesque models, of the wonderfully light and graceful churches of the thirteenth and fourteenth centuries that are so plentiful throughout Europe.

84. The System of Equilibrium.—The system of equilibrium, or the principle of balanced thrusts, is illustrated diagrammatically in Fig. 39 (*a*), which represents a transverse section through the roof and walls of a building, the arrow *a* indicating the direction of the downward pressure of the roof. If the roof structure is not sufficiently strong to withstand this pressure, the upper ends of the rafters become depressed and the lower ends tend to thrust out the walls in the direction of *b, b*. Under similar conditions the result would be precisely the same if a stone arch, as in (*b*), were substituted for the wooden rafters, for in that case the load *a* would be transmitted to the walls in the direction *c, c*. In like manner if, as in (*c*), vertical balks of timber were substituted for the walls the balks would fall in an outward direction unless the rafters were connected with each other by tie-beams

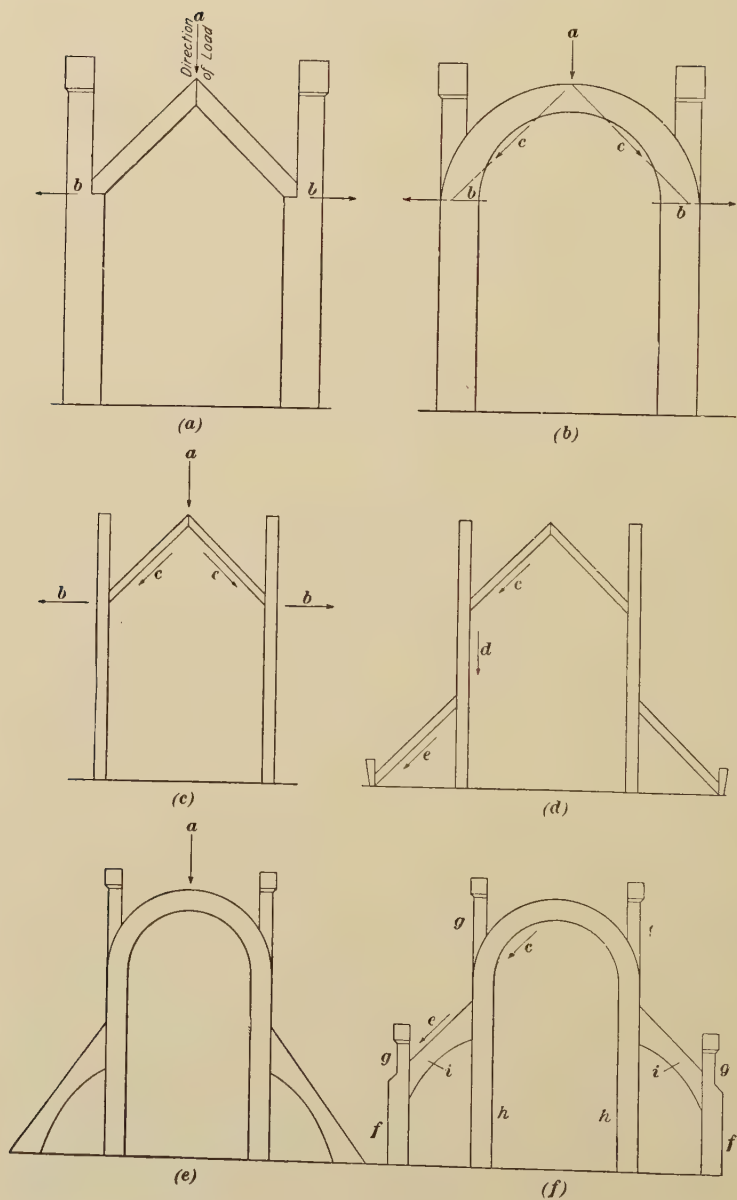


FIG. 39

to prevent the downward pressure *a* from being transmitted in the direction *c, c* to *b, b*.

85. But all danger can be overcome and the rigidity of the vertical balks ensured by strengthening them with struts, or *shores*, placed at the foot, as in Fig. 39 (*d*), which would have the effect of causing the *thrust* of the roof to take the direction *c, d, e*. The application of this principle to the stone arch at (*b*) results in a structure in which the main walls are supported by external semi-arches, as shown in (*e*), to enable the walls to withstand the outward pressure or thrust of the roof.

86. **Buttresses.**—When clothed in architectural form the system of balanced thrusts presents, as in Fig. 39 (*f*), the essential principles both of the ordinary wall buttress and of the *flying buttress* of later mediæval times. Thus, if the piers *f, f*, in view (*f*), were built in direct contact with the walls *h, h*, they would form ordinary buttresses and as such would greatly strengthen these walls. But when, as in (*f*), the piers *f, f* are only indirectly attached to the walls *h, h* by means of the semi-arches *i, i* then the combination of the pier *f* and the arch *i* forms the structural element known as a **flying buttress**, which performs the same function as the strut and stake in the ground of Fig. 39 (*d*). Additional rigidity in walls and piers is obtained through the downward pressure exercised by the weight of the pinnacles *g* in (*f*), which are continued up well above the arches and the vertical parts of the flying buttresses *f, f*.

87. **Fireproof Construction.**—The stability of Roman buildings was assured by the immense strength and massiveness of the weight-bearing piers, and by the general cohesion and solidification of all portions of the structures. In addition, the Romans were highly skilled engineers and had the best of building materials at their disposal. But the Romanesque builders were less fortunate, as neither skilled craftsmanship nor good materials were readily obtainable. But despite many difficulties the urgent need of rendering their buildings fire-resisting caused the early Romanesque architects to make many experiments with the view of finding a method of continuing the solid stone construction

of the piers and walls of their churches over the whole of the interior in the form of an inner stone ceiling or vault.

88. Vault Construction.—The first attempts at vaulting made toward the end of the tenth or at the commencement of the

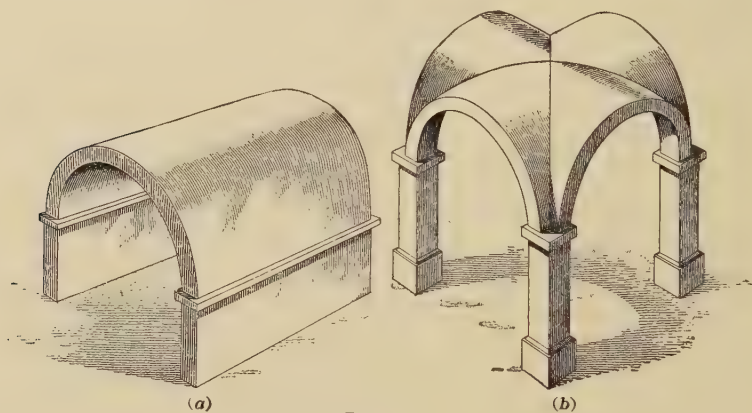


FIG. 40

eleventh century by the Romanesque architects were with the barrel and intersecting vaults of Roman times illustrated in Fig. 40 (a) and (b). At first the nave of a church was covered

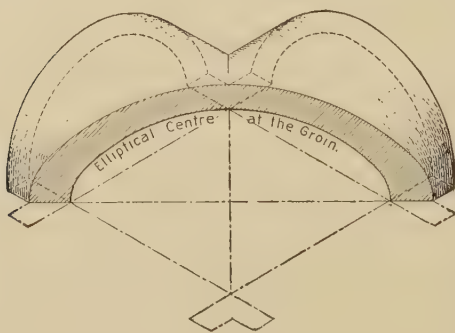


FIG. 41

with a continuous barrel vault, as at (a), strengthened by transverse arches. The thrust of these heavy vaults was resisted by half-barrel or other vaults placed over lofty aisles, resulting in an arrangement under which the clerestory windows disappeared

and the aisles were constructed in two stories. But owing to the collapse of many of these ponderous early mediæval vaults a new principle of vaulting was adopted and intersecting barrel vaults, as shown in Fig. 40 (b), were introduced. As giving greater

strength, increased height for the windows, and only requiring to be supported at certain points, the adoption of the cross-barrel vault was a great step forward in the development of mediæval vaulting. But fresh difficulties arose when the attempt was made to adapt the intersecting barrel vault to an oblong space.

89. The intersecting lines or groins of the two semicylinders that covered a bay of the Roman vault were elliptical in form, as shown in the section in Fig. 41, and the height

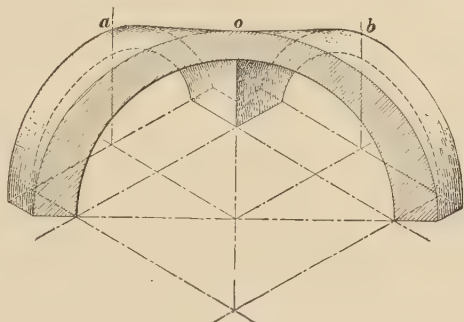


FIG. 42

of the vault was therefore no greater at the crown than at the semicircular ends. But want of scientific knowledge led the early Romanesque builders to modify the Roman vault by constructing the groin

in the form of a semi-circle, as in the section Fig. 42, with the result that the crown *o* of the vault rose above the crowns of the arches *a* and *b*. Thus modified the principle of the Roman vault was applied to church roofs, when it was found that if the square cross-vault

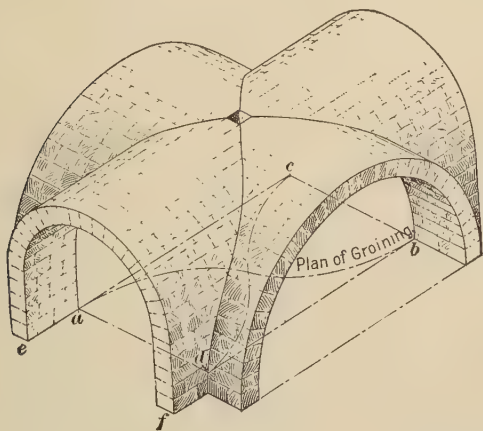


FIG. 43

plan were adopted it would be necessary for the sake of architectural effect to include two vaulting compartments of the aisles to one of the nave, because the width of the latter was usually about twice that of the former. But to obtain

the required result and at the same time to enable the crowns of the arches to be formed at one uniform level, it was necessary to stilt the smaller semicircular arches, as at *e, f*, Fig. 43, which caused the lines of the groin to assume the curved form shown in the illustration. An attempt to solve the problem by reverting to the semicircular form, both for the smaller arches and for the groin, caused the line of intersection to become straight in plan but produced a warped and twisted surface in the vault.

90. Thus developed by Romanesque architects and applied to an oblong bay, the Roman intersecting barrel vault presented the appearance indicated in Fig. 44, where *r, s, v, t* is the plan

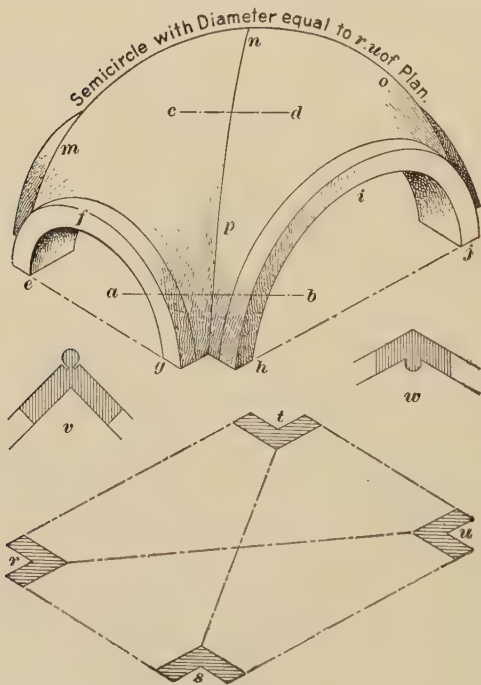


FIG. 44

of the space to be covered, *e, f, g* the end or smaller arch over *r, s*, and *h, i, j* the side arch over *s, u*. The semicircular intersecting curves over the diagonals *r, u* and *s, t* of the plan are shown at *m, n, o* and *p, n* of the upper illustration in Fig. 44.

In a vault of this description the groins inside do not form a continuous projecting edge disappearing into the vault surface at the crown, as is the case when the intersecting arches are of the same

diameter. For example, the form of section produced by cutting the lower portion of the vault on the line *a b* is shown at *v*, which, as seen, shows a projecting groin. In its progress

upwards the angle becomes more and more obtuse, finally reversing itself, and becoming an interior angle, as shown at *w*, which is a section taken on the line *c d*.

91. A pointed groined vault, the intersecting lines of which are semicircles, is shown in Fig. 45. In this case the groin *c d e* is straight in plan, but the crown *o* of the vault is higher than the apex of the pointed arches *a* and *b*. As a consequence, the crown of this vault is curved to a less extent but in the same way as that shown in Fig. 43.

92. With the introduction of the pointed arch the difficulties connected with the intersection of vaults of unequal span finally disappeared. For if the groins were semicircular both the transverse and the longitudinal or wall arches, although of different spans, could be

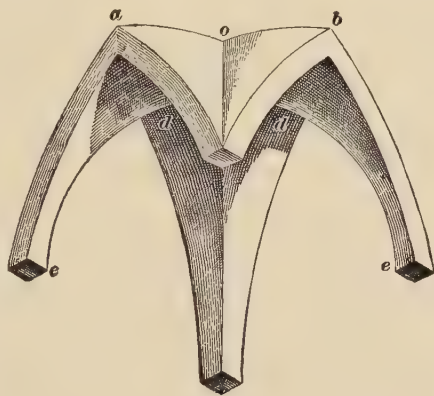


FIG. 45

made to rise to the same height without causing distortion. The application of ribs or moulded arches to the lines of the groins, the regularity of which was now assured, and transversely at the ends of each bay soon followed. Projecting below the surfaces of the vault they formed a solid framework of stone and thus supported the now light filling-in material that formed the surface of the vault proper. When, at a later period, concord of form was considered desirable, the semicircular arch was altogether abandoned in favour of the pointed one, and the free use of the pointed arch in its application to vaulting led to greater diversity of design and economy of construction. But while in France the churches were usually covered with large, boldly curved vaults, in England numerous vaulting ribs cut the intermediate surfaces into a variety of small compartments, with the result that English vaults often appeared more complex.

FRENCH ROMANESQUE ARCHITECTURE

NOTES ON FRANCE

GEOGRAPHICAL, HISTORICAL, AND SOCIOLOGICAL

93. Geographical.—As seen from Fig. 46, which shows France in mediæval times, this country is bounded on the north by Belgium and the English Channel, on the south by Spain and the Mediterranean, on the east by Italy, Switzerland, and Germany, and on the west by the Bay of Biscay. Open only on its north-east or German side, the mountain ranges that enclose the country on the south and south-east not only protected it from invasion by the Arabs of Spain, but served to isolate the nation from Italian civilization.

94. Climate.—The climates of East and West France are in striking contrast. On the extended coastline of the latter warm, moist, south-westerly winds prevail, while in the eastern part of the country the extremes of summer heat and winter cold are experienced.

95. Geological.—France produces an immense amount of building stone and granite and marble are plentiful.

96. Historical.—The Merovingian dynasty established by Clovis lasted until A.D. 752, when it was succeeded by the kings of the Carolingian line. During the three centuries through which the first Frankish dynasty extended France was divided into various kingdoms, but as the Merovingian kings became more and more corrupt, and less able to govern, all power finally fell into the hands of the chief magistrates, or mayors, of the Palace. Early in the eighth century the family of one of these mayors, named Pepin, became famous. Pepin's son, Charles

Martel, beat back the Saracens at Tours and in 752 the son of Charles, known as Pepin the Short, deposed the last Merovingian king and founded the Carolingian dynasty. The new king not only enlarged his own dominions, but inaugurated the temporal sovereignty of the popes by placing the government of Rome, and other Italian cities, in their hands.

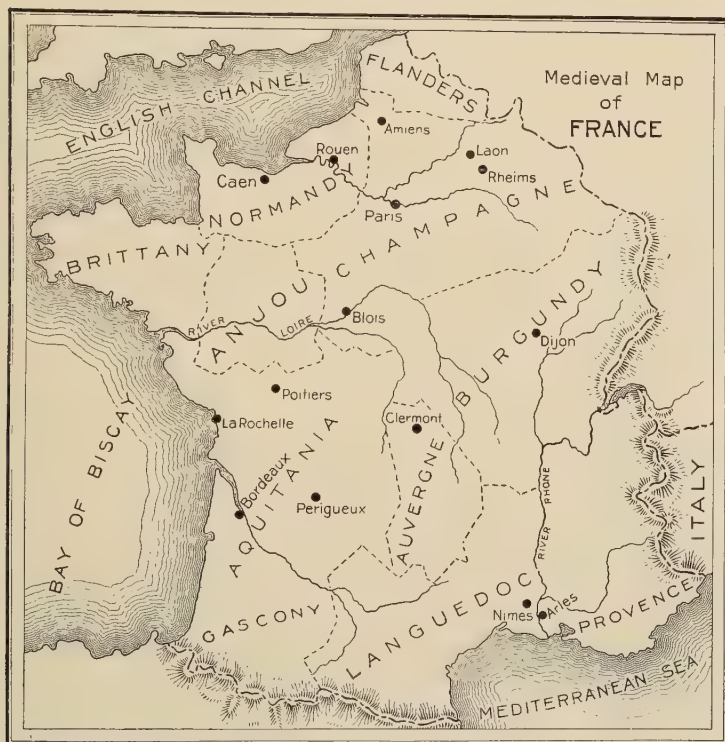


FIG. 46

97. Under Pepin's son Charlemagne, or Charles the Great, the military supremacy of the Franks reached its zenith. It was the dream of this great monarch to reunite the fragments of the old Roman Empire. To effect his purpose he protected the Church, which the Teutons loved, and carried the cross at the head of his armies. Charlemagne is said to have made fifty-three expeditions against twelve different nations during which

he defeated the Arabs, destroyed the Lombards, and subdued the Burgundians, Saxons, and Avars. After thirty-three years of warfare his dominions extended from the German Ocean to the Adriatic and from the Channel to the Lower Danube.

98. For his services in restoring Roman order and propagating the Christian faith, the imperial title was revived and Charlemagne was crowned Emperor of Rome by the Pope in A.D. 800. The Western Empire was thus restored and Charlemagne founded his administration on the old imperial lines. His vast dominions were divided into provinces governed by local administrators, and his delegates frequently visited each centre of government to redress grievances and administer justice.

99. Charlemagne's interest in the welfare of the Church led to the partition of the empire into numerous dioceses. Bishoprics were established, abbeys built, and schools opened in the monastic buildings. The study of Latin literature was encouraged and the University of Paris founded.

100. The advance of art and letters was zealously fostered by Charlemagne. His imperial palaces were magnificent structures, that at Aix-la-Chapelle, in particular, being so luxurious that it was popularly known as "Little Rome." It contained numerous spacious halls, a theatre, swimming and other baths, and a fine library. Rich mosaic pavements, porphyry columns from Ravenna, and gold and silver furniture adorned this sumptuous building. A college, attached to the palace, was presided over by Alcuin, an Anglo-Saxon monk, and one of the greatest scholars of his day. Surrounded by the learned men whom he attracted to his court the Emperor devoted much of his time to scientific study, music, and languages, and thus went far in his endeavours to revive ancient culture. But the civilization of a nation is beyond the power of one man, however gifted, and, as it has been well expressed, "in vain did Charlemagne kindle the flame, it was only a passing torch in the midst of profound night." For this revived civilization almost totally disappeared within a few years of the death of the great king whose life's work thus perished with him.

101. Charlemagne's son Louis divided his vast inheritance between his sons who, subsequently, quarrelled among themselves and waged war over their respective shares. The family feud was ended by the treaty of Verdun, A.D. 843, which partitioned the empire among them. Under this treaty Lothair received the central power and the title of Emperor with dominion over Italy, Burgundy, and Lorraine; Louis East Frankland or, as it was afterwards called, Germany, and Charles the Bald Western Franconia, or France. The kingdoms of France and Germany were thus separated and Charles the Bald took rank as the first king of France.

102. Even during the reign of Charlemagne the Scandinavians had commenced to ravage the coast of France and, under his weak successors, they swarmed up the rivers in their boats, burning and plundering the country as they passed. Early in the tenth century a tribe of Scandinavians known as Norsemen, or Normans, ascended the Seine and attacked and pillaged Paris. The fierce Norsemen so intimidated the king, Charles the Simple, that he gave their chief, Rollo, the hand of his daughter with the territory of the present Normandy as dowry. Rollo who thus became, in 912, the first Duke of Normandy was the ancestor of William the Conqueror.

103. The Normans adopted the language and customs of the French and, accepting Christianity, built magnificent churches and made great advances in civilization. Soon Normandy became the most prosperous and best-governed province in the kingdom. The adoption of the feudal system by Rollo probably led to its subsequent introduction into England through William the Conqueror.

104. In the troublous times of the Norman invasion the later Carlovingian kings proved powerless either to defend or govern the country. The people therefore sought the protection of the neighbouring lords and found refuge in their castles. In this manner the feudal system became prevalent in the kingdom.

105. In the tenth century France existed only in name; the true state, as seen from the map, Fig. 46, consisted of the large

provinces, such as Aquitaine, Normandy, and Burgundy, each of which had its independent government.

106. The dynasty of the Capetian kings commenced with Hugh Capet, who was crowned at Rheims in 987. But the Royal Domain comprised only the small territory between the Seine and the Loire and even there the nobles were often more powerful than the king. The early monarchs of the Capetian line did little to strengthen their authority, and when William of Normandy won the English throne there began a long rivalry between England and France which for centuries retarded the growth of the latter country.

With the marriage of Eleanor, the divorced wife of Louis VII, to Henry Plantagenet, Count of Anjou, afterwards Henry II of England, the provinces of Poitou and Aquitaine were lost to France.

ARCHITECTURAL EXAMPLES

DISTINCTIVE FEATURES

107. Square Piers and Chevet.—Fostered by the all-powerful Church, the art of architecture was studied and practised by the monks. Thus the various ecclesiastical buildings which, toward the end of the tenth century began to be plentiful in France, had usually some special connection with Cistercian and Cluniac monasteries. A Romanesque church in the north of France nearly always comprised a lofty nave, placed between two lower aisles, from which it was separated by piers instead of columns, and two slightly projecting transepts. At first, very simply planned, the apse was developed in later examples of the style into a choir with radiating chapels attached, an arrangement known as a *chevet*. The church was usually crowned by a square or octagonal tower placed either at the crossing, on one side of the choir, or in the centre of the western façade.

108. Barrel Vaultings.—One of the distinguishing features of Romanesque art, namely, the barrel vaulting of ancient Rome, was general in all parts of the country. But in Northern France



FIG. 47. CHURCH OF ST. TROPHIME, ARLES



FIG. 48. CLOISTERS FROM ST. TROPHIME, ARLES

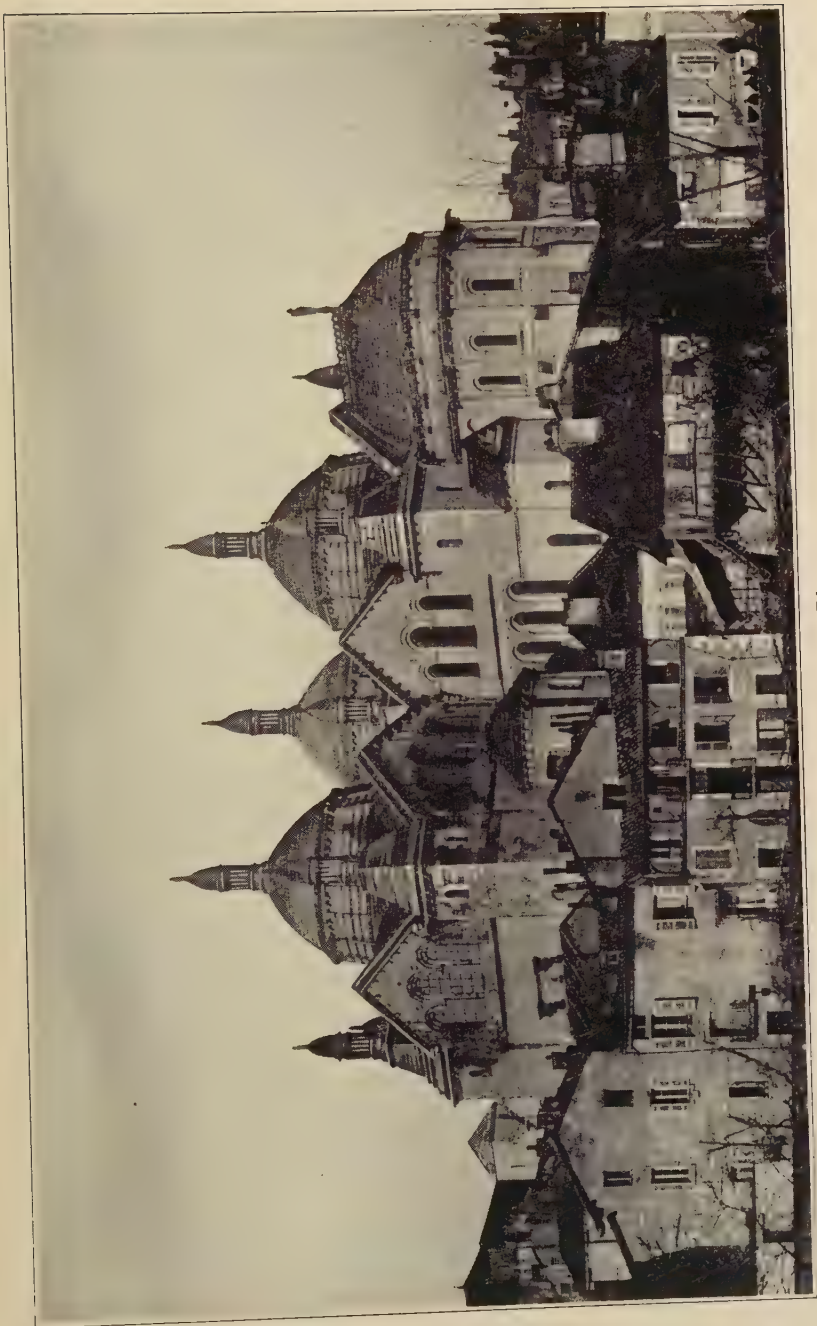


FIG. 49. ST. FRONT, PÉRIGUEUX

and Burgundy the naves of the earlier churches were furnished with flat roofs, and only the choir and aisles were vaulted. At a later period groined vaulting superseded the flat roofing of the nave and the barrel vaulting of the aisles and choir. Many domed churches, based on the design of St. Mark's, Venice, were erected in South-Western France.

109. Use of Sculptures and Paintings.—Consequent on the substitution of stone vaulting for the earlier flat roofs of the nave came a substantial increase in the thickness of the walls and a reduction in the size of the window and other openings. Painting and sculpture were now used to relieve the somewhat heavy and sombre effect of the interiors. At first sculpture was chiefly applied to the capitals of the pillars and, externally, to the *tympanum*, or space between the square head of the door and the lower part of the archway which enclosed it, of the principal portal, but later it became customary to use it freely in all parts of the building.

ECCLESIASTICAL BUILDINGS

110. St. Trophime, Arles.—The well-known church of St. Trophime at Arles, of which an exterior view of the porch is

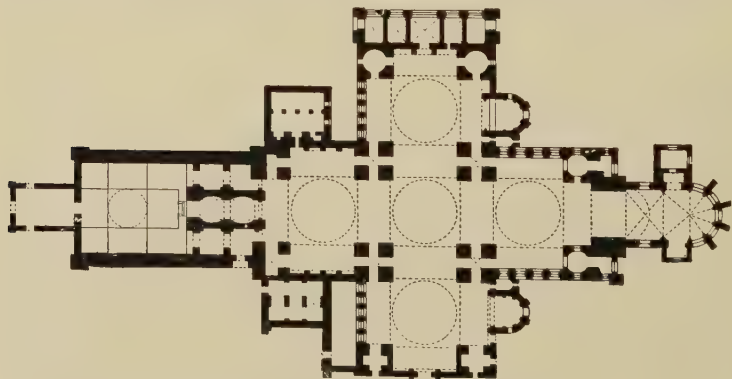


FIG. 50. PLAN OF ST. FRONT, PÉRIGUEUX

given in Fig. 47, is a characteristic example of French Romanesque art. Here classical tradition can be traced in the quasi-Roman details of its early twelfth-century porch, while Byzantine

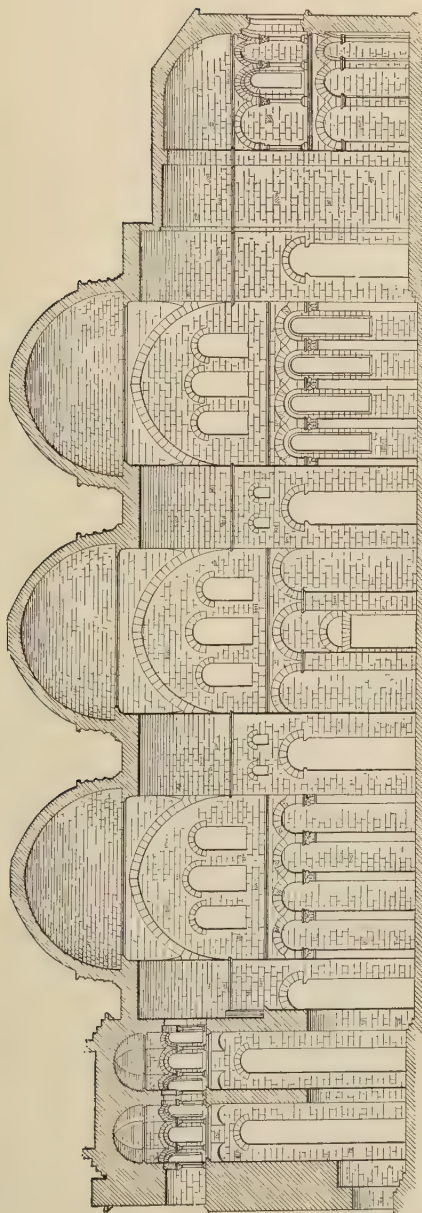


FIG. 51. SECTION OF ST. FRONT, PÉRIGUEUX

influence is plainly discernible in the carved capitals of the cloisters, shown in Fig. 48.

111. St. Front, Périgueux.—The church of St. Front, Périgueux, Fig. 49, one of the most prominent domed Romanesque structures in South-Western France, has been much altered by successive restorations. Its plan, Fig. 50, which is a combination of five squares with domes over them, is undoubtedly based on that of St. Mark's at Venice. Masterly in the simplicity and regularity of its form the internal effect is dignified and monumental, despite the extreme severity of its architectural treatment. The external domes, shown in Fig. 49, are later additions, and do not appear in Fig. 51, the internal cupolas being originally masked by a wooden roof. The massive rectangular piers pierced with openings for passage-ways



FIG. 52. INTERIOR OF ST. FRONT, PÉRIGUEUX

are shown in the longitudinal section, Fig. 51, and in the view of the interior of the church, Fig. 52.

112. Church of St. Croix.—One of the most celebrated Romanesque buildings in the south-west of France, the Church of St. Croix, at Bordeaux, was founded in the seventh and rebuilt in the tenth and thirteenth centuries. Its typical Romanesque west front, Fig. 53, with its recessed portals and blind arcades filled with sculptured figures dates from the eleventh and twelfth

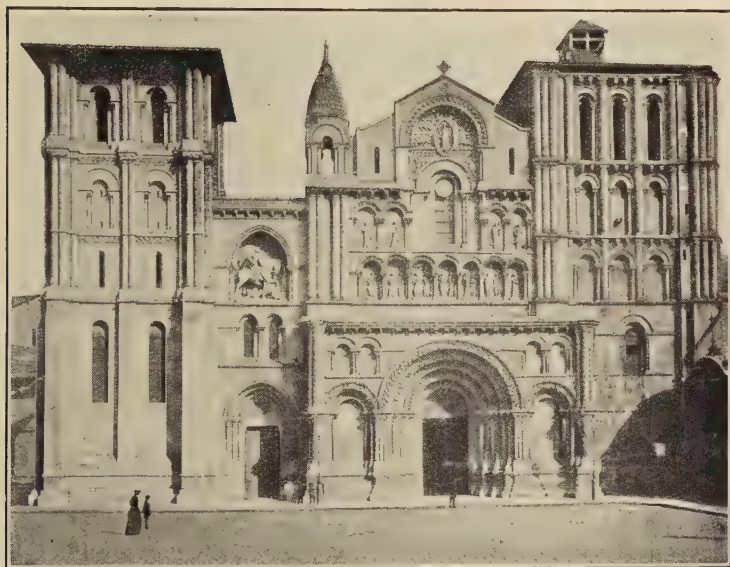


FIG. 53. CHURCH OF ST. CROIX, BORDEAUX

centuries. The figure of Christ and symbols of the Evangelists are placed under the arch of the central gable. No attempt has been made to complete the towers, the clustered columns of which are specially noteworthy.

113. Church of Notre Dame la Grande.—Fig. 54 illustrates the west front of the Church of Notre Dame la Grande at Poitiers. Built in the twelfth century, the arcaded niches of this front are filled with figure sculpture and the strong feeling for decorative effect, universally prevalent at the time, is further shown by

the general richness of the surface ornamentation. The central window was originally circular in form.

114. Abbaye-aux-Hommes.—Commenced by William the Conqueror in 1066, the Abbaye-aux-Hommes, at Caen, Fig. 55, has been much enlarged and altered since its original completion.



FIG. 54. CHURCH OF NOTRE DAME LA GRANDE, POITIERS

As first erected, the choir of the church extended only a distance of two bays beyond the crossing and was finished with a semi-circular apse that had neither ambulatory nor chapels. The present ambulatory and side chapels are later additions of the twelfth century. As will be seen on reference to the plan and the longitudinal section, Fig. 56 (*a*) and (*b*), the nave vaulting



FIG. 55. THE ABBAYE-AUX-HOMMES, CAEN

is of the Romanesque type, as shown in the arrangement of the

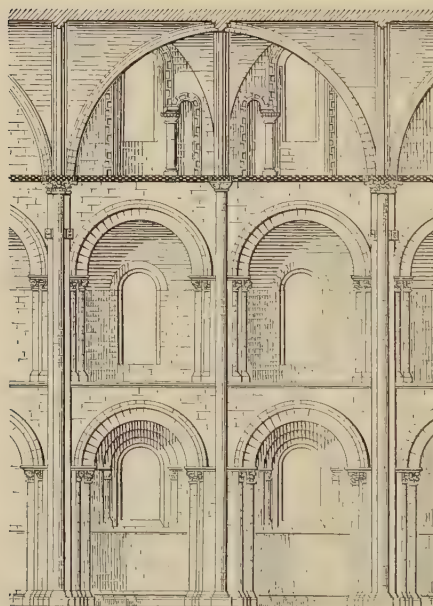
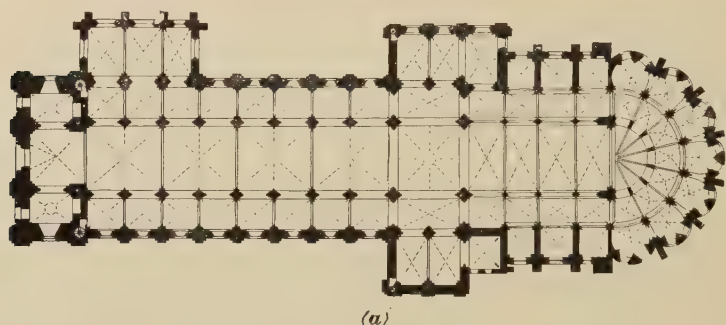


FIG. 56. PLAN AND SECTION OF ABBAYE-AUX-HOMMES, CAEN

square compartments, or bays, by which one bay of the nave coincides with two bays of the aisles.

DETAILS OF BUILDINGS

PLANS, VAULTS, ROOFS, AND ORNAMENTATIONS

115. Plans. — The plans of French Romanesque churches were often based on Byzantine models, as in the case of the church of St. Front, at Périgueux, which was copied from St. Mark's at Venice, although, as seen in Fig. 52, the arches carrying the pendentives are pointed and not semicircular in form. In other instances, as in that of the Abbaye-aux-Hommes, Fig. 56 (a), the church plans of the Romanesque period presented many of

the characteristics of the succeeding style of mediæval art. Recesses, or small chapels, sometimes took the place of aisles in the churches and western portals with elaborately enriched arches supported on clustered columns were frequently important features of the design.

116. Walls.—The main walls were of rubble faced externally and internally with dressed stone. There were no prominent buttresses, but rectangular faces and square projections characterized the wall treatment. The vertical architectural lines were rarely prolonged, with the result that there was usually a predominance of horizontal lines, as seen, for instance, in Fig. 54. Previous to the twelfth century towers were seldom combined with the body of the church, but usually took the form of plain belfries covered with pyramidal roofs.

117. Roofs.—Vaulted roofs, which eventually superseded flat ceilings,

were divided into bays by transverse ribs and, where groining was used, the groin was also accentuated by ribs. The buttressing was mainly internal.

118. Openings.—The round arched openings for windows and doors had widely splayed or recessed sides. Both doorways and windows were frequently ornamented with columns placed in the receding faces of the jambs.

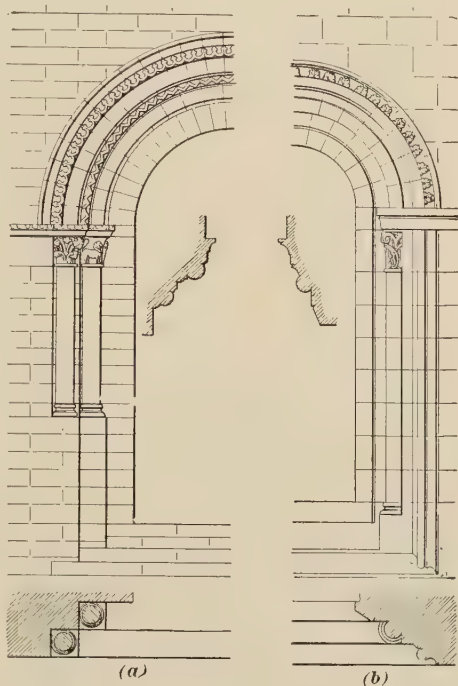
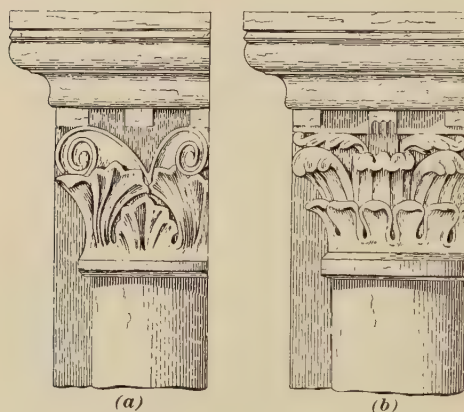


FIG. 57

119. Mouldings.—The mouldings were of a simple character and usually based on those of a classic type. Corbel tables were frequently used as a finish to the upper walling.

120. Columns.—Piers instead of columns usually separated



the nave from the aisles of the church. These piers, although sometimes cylindrical in form, were often clustered. In later examples of French Renaissance work one or more of the shafts of the compound pier was carried up to support the vaulting rib. The caps of the columns were generally of the Corinthian or Byzantine type.

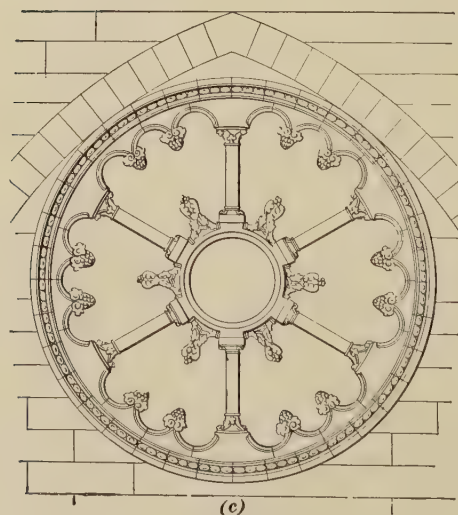
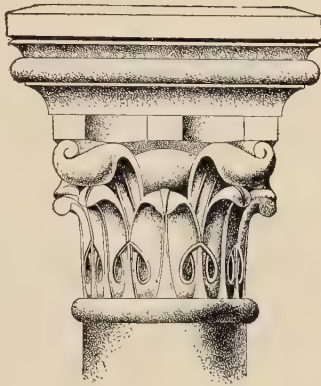


FIG. 58

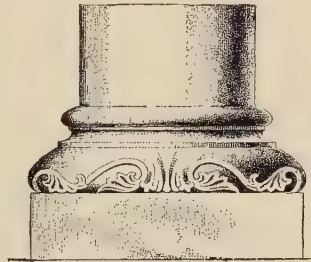
121. Ornamentation. — Byzantine influence is found in the ornamentation of the churches of Southern France. It is manifested in the preference shown for chimeras, dragons, quadrupeds with human heads, and similar grotesque monsters, and it is also seen in the exaggerated height of the

sculptured figures and in the peculiar arrangement of the folds of the drapery. The Romanesque sculptors of Auvergne and

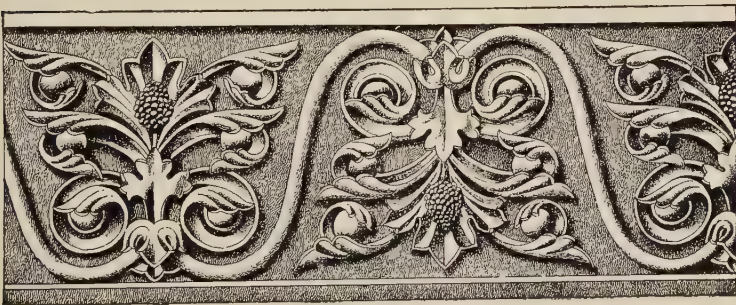
Burgundy, however, early discarded the conventional treatment of ornamentation and began to use natural forms as patterns for carving. Unfortunately, the original mural paintings in the Romanesque churches of France have almost entirely disappeared. The moulded archways of the doors and windows were generally carved with *chevrons* or zig-zags, grotesques, and other conventional enrichments, as shown in the twelfth-century porch of the church of Notre Dame at Beaugency, Fig. 57 (a), and in the window from the church of the same name, at Chalons-sur-Marne, Fig. 57 (b). In both of these examples the ornamentation of the lower part of the openings is worked in recessed planes and continued round the semicircular heads in the form of boldly moulded and



(a)



(b)



(c)

FIG. 59

enriched *archivolts*, or arch mouldings. Some characteristic

examples of voluted and foliated capitals from the old twelfth-century clock-tower of Chartres Cathedral are shown in Fig. 58 (a) and (b), while (c) illustrates a late Romanesque *rose*, or *wheel*, window from the triforium of the choir of Notre Dame at Paris. Fig. 59 (a) and (b) shows a capital and base from Worms Cathedral and (c) a running border enrichment in which the acanthus is utilized.

GERMAN ROMANESQUE ARCHITECTURE

NOTES ON GERMANY

GEOGRAPHICAL AND HISTORICAL

122. Geographical.—Germany is bounded by Holland, Belgium, and France on the west, Switzerland and Austria on the south, Poland and Russia on the east, and by the Baltic Sea and Denmark on the north. It measures about 500 miles each way and is well watered by rivers.

123. Climate.—The climate of Germany is hot in summer and cold in winter, the west being warmer than the east owing to the damp breezes from the North Sea, while the greater part of Prussia and Saxony is swept by the cold winds from Russia and the Baltic.

124. Historical.—The history of Germany, as separate from that of France, commences with the division of Charlemagne's empire among his grandchildren. As in France, the later Carolingian kings of Germany were weak rulers and, consequently, during the Norsemen invasions of the country feudalism took deep root. But unlike the former country, which consisted of separate fiefs, or provinces, governed by powerful nobles, the dominion of Germany comprised separate nations, such as Franks, Saxons, Bavarians, and others. A map of mediæval Germany is given in Fig. 60.

125. In France, the monarchy gradually absorbed the different feudatories and thus became supreme, but in Germany the states were jealous of one another, disunited, and often openly hostile. Thus, although the struggle between the crown and its powerful vassals was identical in both countries, the results differed. In addition, in Germany the crown was elective and not hereditary as in France, and while the descendants of Capet possessed the throne of France for eight centuries, German dynasties were



FIG. 60

usually short-lived. Nor had Germany any central capital, such as Paris, to assist in creating a national spirit among the Germanic nations.

126. When the German branch of the Carolingian line ended, the succeeding short reign of Conrad, Duke of the Franks, was followed by the inauguration of the Saxon dynasty from 919 to 1024. During the reign of the first king of this dynasty the country suffered from the continual raids of the Magyars, a tribe

of barbarians occupying the plains of modern Hungary, see Fig. 60, who were finally overthrown, converted to Christianity, and became German subjects. On the adjacent frontier the king, Otto the Great, formed a military centre, known as the Oster-March, now modern Austria.

127. Walled towns and strong fortresses, called *burghs*, round which villages soon sprang up, were built for the protection of the people against barbarian inroads. The men appointed to live in these fortresses became known as burghers and formed the class that afterwards supported the crown in the disputes with the nobles.

128. Otto the Great, 936 to 973, the second king of the House of Saxony, continued to hold the German tribes together as one nation and to wage successful wars against the barbarian nations on the east and north of his kingdom. As the result of a successful expedition into Italy Otto received the Lombardic crown, at Milan, and that of the Cæsars, at Rome. He thus re-established the Holy Roman Empire of Charlemagne and, henceforth, the rulers of Germany claimed to be kings of Lombardy and, as Roman Emperors, the heads of Christendom. This imperial policy drove the German kings into constant wars with Italy, where they exhausted their strength and resources to the advantage of the ever-increasing feudalism.

129. During the eleventh century, 1024 to 1125, when Franconian emperors held the throne of Germany, Conrad II, the first monarch of the dynasty, annexed Burgundy to the Empire and in the reign of the third emperor, Henry IV, 1056 to 1106, the famous Hildebrand assumed the tiara as Pope Gregory VII. Iron-willed and energetic, he was resolved to reform the Church and make it supreme. As Pope, Hildebrand put forward the following claims: (1) Pre-eminence over kings and the power to give or withhold crowns; (2) that the Pope alone had the right to appoint bishops; (3) that no prince should hold a priestly office; and (4) that ecclesiastical appointment should not be sold. As much of the land and wealth of Germany was held by bishops, it followed that by taking from them the

right of investiture they would be released from paying feudal service to the Emperor and would be made subject to the Pope. Strongly opposing Gregory's proposals, the Emperor summoned an ecclesiastical council which proclaimed the deposition of the Pope. In reply the latter excommunicated the Emperor and released his subjects from their allegiance. Taking advantage of the opportunity to humble the monarch, the German princes of the various states threatened to elect a new ruler, and, cowed by the threat, Henry yielded and was reconciled to Gregory.

130. But fresh trouble arose. Rudolph of Swabia was elected emperor by the princes and, finally, recognized by Gregory. Then Henry declared war on his rival, slew him in battle, invaded Italy, appointed a new pope, and forced Gregory to take refuge in Normandy, where he died.

131. The Hohenstaufen line of Germanic emperors, 1138 to 1254, was founded by Conrad III of Swabia, whose rule was strenuously opposed by the Saxons. It is said that during the siege of Weinsberg the rebels raised the war-cry of Welf, the name of their leader, and Conrad's army that of Waiblingen, the birthplace of Frederick of Swabia, the king's brother. These cries, corrupted by the Italians into Guelf and Ghibeline, were afterwards applied to the adherents of the Pope and the Emperor, respectively, in their protracted struggles for supremacy.

132. On the death of Conrad III, in 1152, his nephew, Frederick Barbarossa, or Redbeard, was elected king. During the reign of this able and powerful monarch the Italian cities became jealous of their rights and privileges. Frequent wars broke out among them and the weaker cities oppressed by the stronger appealed to the Emperor for assistance. Then quarrels arose with the Holy See and the old strife between Pope and Emperor, Guelf and Ghibeline, began again. Frederick took Milan and razed it to the ground, but the Lombard cities formed a league against the Emperor and after years of strife Frederick made peace, submitted to the demands of the Pope, and granted to the Italian towns their municipal rights. Henceforth these rights were tenaciously upheld by Italian cities against successive emperors.

133. With the death of Conrad IV in 1254 the Hohenstaufen dynasty came to an end and for a period of nearly twenty years, known as the *Great Interregnum*, the empire had no recognized chief.

ARCHITECTURAL EXAMPLES

CHURCHES AND CATHEDRALS

134. **Distinctive Features.**—As was the case in the development of the Romanesque architecture of France, German Romanesque art was founded by attempting to adapt the basilica plan to the exigences of vaulted construction. In addition, the architecture

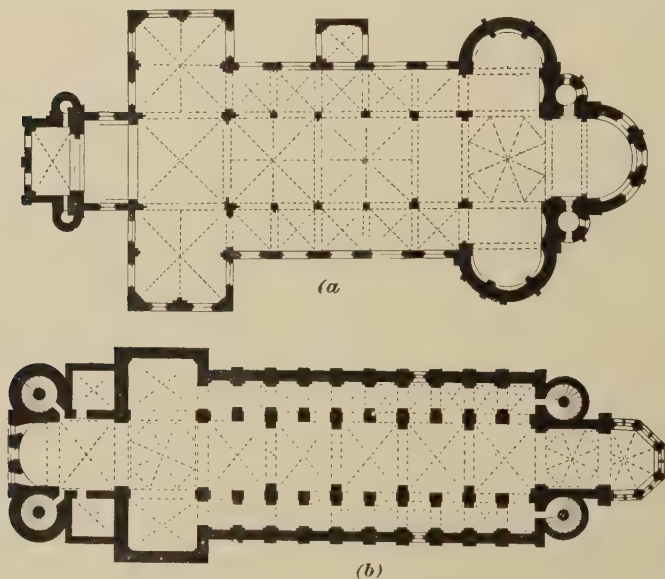


FIG. 61. PLANS OF THE CHURCH OF THE HOLY APOSTLES, COLOGNE,
AND WORMS CATHEDRAL

of the Romanesque school, in Germany, contains in its massive walling, clustered piers, richly carved mouldings, and recessed round-arched openings, many features common to Romanesque art in all parts of Europe. Numerous towers, usually square or octagonal, but sometimes circular on plan, were specially



FIG. 62. CHURCH OF THE HOLY APOSTLES, COLOGNE.

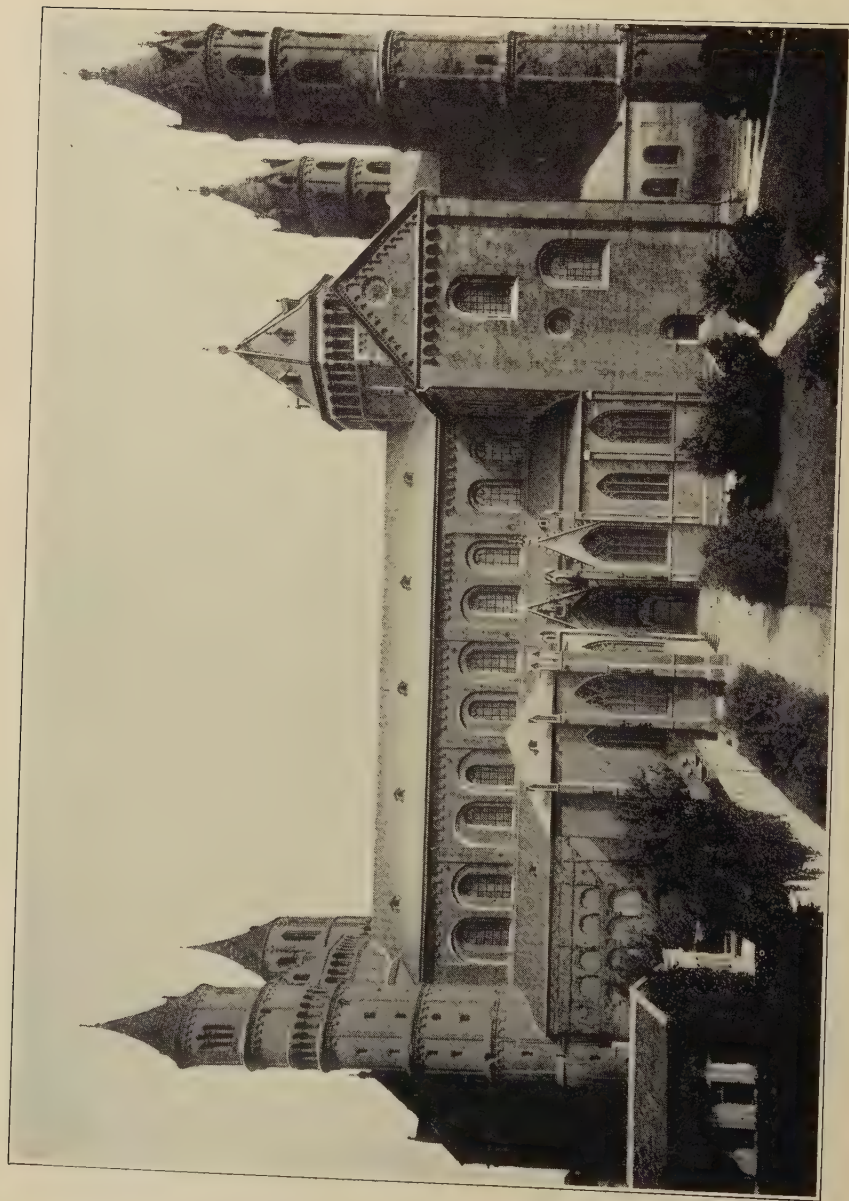


FIG. 63. CATHEDRAL AT WORMS



FIG. 64. INTERIOR, CATHEDRAL AT WORMS

characteristic of German Romanesque churches which, on the whole, were more homogeneous in style than those of France.

135. Church of the Holy Apostles, at Cologne.—The Church of the Holy Apostles, at Cologne, Fig. 61 (*a*), has apsidal terminations to the transepts in addition to an eastern apse. Its sky line is broken by an octagonal lantern placed at the east crossing, by a large square west tower, and by octagonal eastern turrets, as seen in Fig. 62. The small arcaded galleries under the eaves of the roof have a very pleasing effect and the general aspect of the building when viewed from the east, as in Fig. 62, is extremely picturesque.

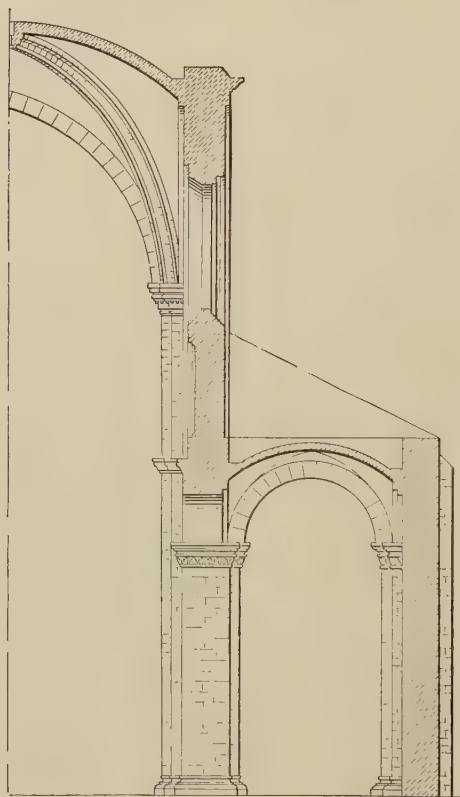


FIG. 65. SECTION, CATHEDRAL AT WORMS

136. Worms Cathedral.—As will be seen on reference to the plan, Fig. 61 (*b*), of this Rhenish church, the width of the nave is double that of the aisles and its vaulting, a good

example of German Romanesque work at its best, is nearly square in plan. The main building, Fig. 63, which is Romanesque throughout, was constructed in the twelfth century, but of the original work only the eastern end now remains, the other parts of the building having been restored at a somewhat later period. As to the interior of the cathedral shown in the general view, Fig. 64, and

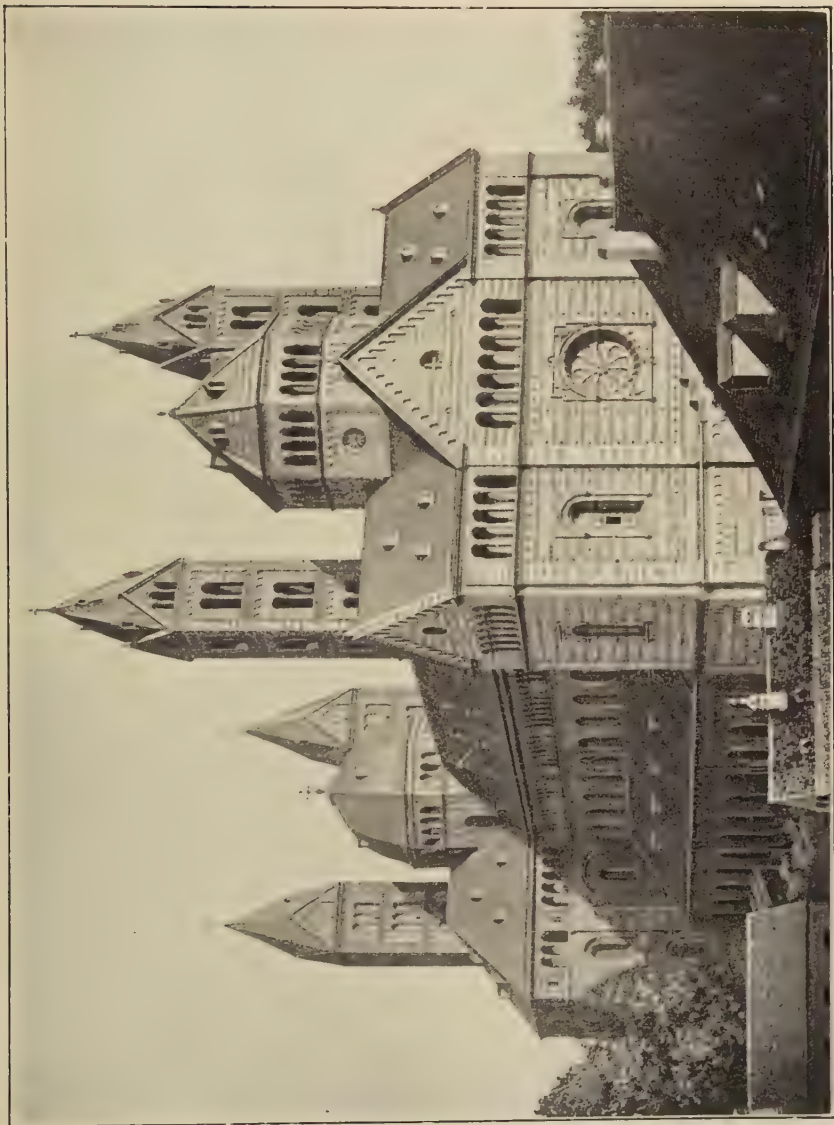


FIG. 66. CATHEDRAL AT SPEYER

in the transverse section, Fig. 65, a desire to obtain verticality led to the continuation of the piers, in the form of pilasters, above the springing of the arches of the nave arcading. The supports of the latter take the form of large and small piers, placed alternately, the latter being rectangular in form. Externally the skyline is broken by four circular turrets flanking the apses and by a low octagonal tower marking the crossing.

137. Speyer Cathedral.—This building, which has six bays, is almost the only example of a large German church without a western apse in which western towers are omitted. There is a spacious galleried narthex at the west end, the upper part of which is shown in the view, Fig. 66. The nave of the Speyer Cathedral is 45 feet wide and 105 feet in height, and the small square turrets at the east and west end of the building group very effectively with the two central octagonal towers. Speyer, or Spires, Cathedral dates from the eleventh century.

138. Bonn Cathedral.—Like most German churches of its period, the eastern end of Bonn Cathedral, shown in Fig. 67, has a large apsidal ending flanked by lofty towers. There is no aisle round the nave and the central tower above the crossing is a later addition of the thirteenth century.

DETAILS OF BUILDINGS

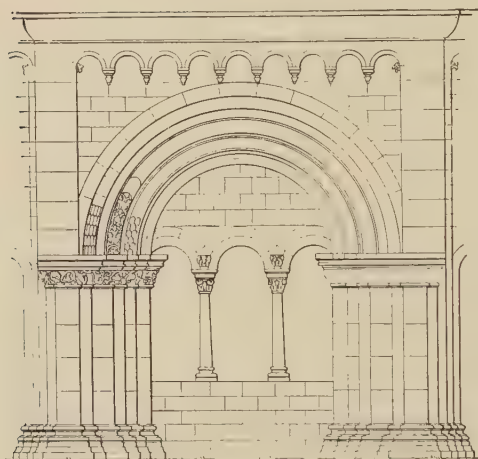
PLANS, WALLS, ROOFS, AND ORNAMENTATION

139. Plans.—The basilica served as the model for the Romanesque churches of Germany which often had apses at each end of the nave. Ambulatories, or corridors, were rare and radiating chapels never used, but tribunes and external galleries were common. Considerable projection was often given to the transepts to which small apses were sometimes added. Doorways were usually formed in the north and south aisles, and seldom at the west end of the church.

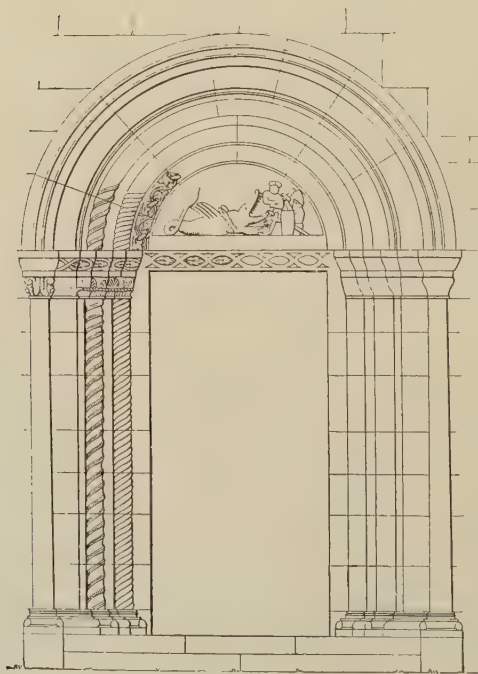
140. Walls.—Owing to the general absence of buttresses the walls were solidly constructed to receive the thrust of the roof



FIG. 67. CATHEDRAL AT BONN



(a)



(b)

FIG. 68

vaulting Arcading was systematically used for the external decoration of the walling and small open galleries under the eaves of the roofs were common features.

141. Roofs.—In Saxony wooden ceilings were in general use until the end of the twelfth century, when they gave place to vaulted roofs, but the Romanesque churches of the Rhine district were vaulted throughout at a much earlier date.

142. Columns. The capitals of the columns, often cubical in form, were adorned with conventional foliage or Byzantine enrichments. Nave arcadings, consisting of piers, or of a combination of piers and columns, were sometimes formed with alternate massive and slender supports.

143. Openings.—The narrow round-headed windows, usually arranged in single lights, were not characterized by any great variety of design, and the doorways and arched portals were very similar to those belonging to the Romanesque period in France and England for the adornment of which clustered jamb shafts and elaborately carved arch mouldings were freely used.

144. Mouldings.—At first the mouldings had no special characteristics, but were similar to those commonly used in Romanesque work throughout Europe. In later examples of the German Romanesque period the mouldings became of more importance on account of the elaborate nature of their enrichments.

145. Ornamentation.—The ornamental sculpture was generally worked in low relief, the enrichment being formed by sinking portions of the surfaces and leaving the remainder of the stone untouched. Decorative features, whether derived from Greek or Roman models, were usually much debased and otherwise very freely rendered. Coloured decoration was occasionally applied to the walls through the medium of fresco or tempera. Mosaic work was comparatively rare, but coloured bricks and tiles were freely used. Fig. 68 illustrates Romanesque ornamentation of the usual type as applied to the portal of the Abbey Church at Laach, shown at (a), and to a doorway at St. Michael's Church, Altenstadt, at (b). Clustered jamb shafts, elaborately moulded and enriched archivolts, and many elements of Byzantine ornamentation are prominent features of each structure.

146. Other examples of German Romanesque ornamentation are shown in Fig. 69 (a), (b), and (c). The columns of the arcading from Laach Abbey, illustrated at (a), are Byzantine in character, but the small semicircular arches carried on corbels under the eaves of the roof are thoroughly typical of German Romanesque ornamentation. Fig. 69 (b) illustrates two small capitals side by side covered by a single abacus. The carving of these capitals, from the Church of St. Mary at Cologne, representing grotesque animal forms and conventional foliage, is of a type comparatively rare in Germany. A thirteenth-century capital,

from Southern Germany, is shown in Fig. 69 (c) and the base of a column of the same period at (d). In this as in many other

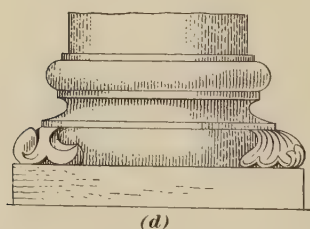
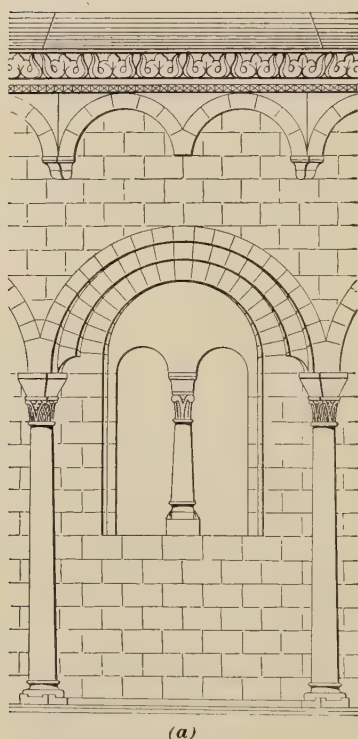


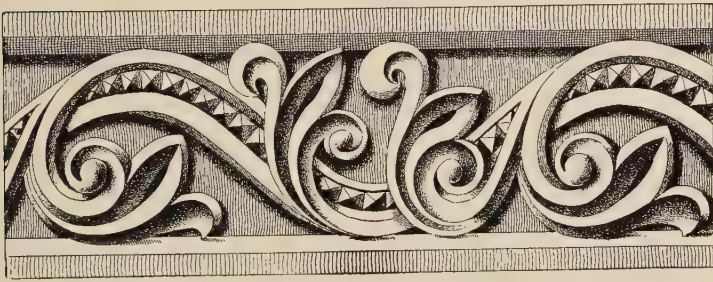
FIG. 69

examples of German Romanesque bases the attic type of classical times has been followed, and as in the French Romanesque bases *griffes*, or angle leaves, connect the circular base with the corners of the square plinth on which it rests, as seen from Fig. 69 (d).

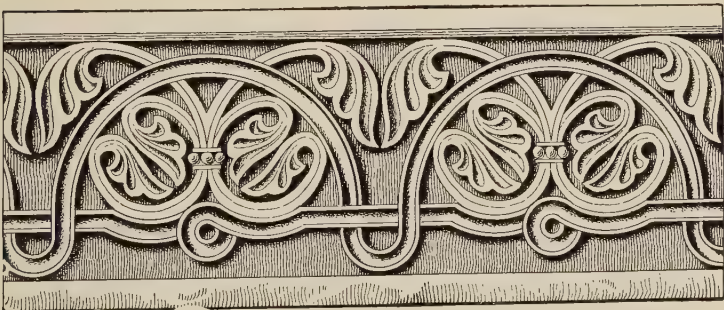
147. Three examples of Romanesque running enrichments are shown in Fig. 70 (a), (b), and (c). That at (a) from South Germany is very characteristic of the stiff conventional foliated



(a)



(b)



(c)

FIG. 70

ornamentation of the country. The more freely treated enrichment at (b) has the favourite Romanesque relief known as the *nail-head* worked in the main scroll form of the design. A border formed of interlacing bands and leaves is illustrated at (c).

ITALIAN ROMANESQUE ARCHITECTURE

NOTES ON ITALY

GEOGRAPHICAL AND HISTORICAL

148. Geographical.—In mediæval times Italy, a map of which is shown in Fig. 71, occupied a central position between the semi-barbarism of the West and the civilization of the Eastern Empire. Owing to geographical, political, and other influences, the Romanesque architecture of Italy varied considerably in different districts. For example, fettered by past tradition the Romans continued to build churches in the original early-Christian style throughout the Middle Ages, but in other parts of Italy Romanesque architecture reached its highest development. Lombardic, or German influence, was great in Northern Italy and its effect is seen in the eleventh- and twelfth-century buildings of Milan, Pavia, Verona, Bologna, and other cities. Local peculiarities are apparent in the Romanesque architecture of parts of Central Italy or Tuscany, more particularly in that of the important cities of Pisa and Florence, and traces of Oriental art are noticeable in the buildings of the Romanesque period erected in Southern Italy and Sicily.

149. Historical.—The fall of the Carolingian dynasty was followed by a period of general disorder in Italy, where petty sovereignties sprang up in all directions. This state of anarchy and political confusion continued until Otto the Great succeeded in re-establishing the Holy Roman Empire of Charlemagne and Italy became blended with Germany. During the subsequent protracted struggle between the popes and the emperors, which

threw the peninsular into disorder for centuries, the feudal lords and cities of Italy sided with either side as best suited their interests.

150. The eleventh century brought a great increase of papal power. Education had been almost entirely neglected and forgotten by all classes of the community, except the priests, who



FIG. 71

therefore became the teachers, secretaries, and ambassadors of kings. With the increase of the temporal power of the papacy, which originated with Pepin's gift of the province of Ravenna,

the owner of the Holy See had become a political prince and, as such, was continually seeking to extend his Italian possessions. The strongly prevalent belief that the world would come to an end in the year 1000 had checked the ravages of war and both land and money had been freely bestowed on the Church. At the beginning of the thirteenth century the papal power under Innocent III was at its zenith. This pope, who had then acquired independent sovereignty in Italy, gave to Peter of Aragon his kingdom as a fief, imposed a tribute on the king of England, and compelled Philip Augustus of France to take back the wife whom he had put away. He claimed pre-eminence over kings, and papal mandates punishing public and private offences were sent in all directions.

151. As the imperial rule declined in Italy many cities became free and increased in wealth and power. Among these free cities Venice, Florence, Pisa, and Genoa were especially prominent. The merchant princes of Venice and Genoa became bankers and controlled the money of the world, while the rapid increase of commerce and manufactures in these and other free cities caused their wealth and influence to rival those of any nation of their time. Consequently the alliance and support of the free Italian cities were frequently sought by the most powerful monarchs.

152. Founded in the fifth century by refugees from Attila's invasion, Venice early obtained prominence as a great naval power and reigned supreme in the Mediterranean. Florence, originally a colony of Roman soldiers, became in the thirteenth century one of the chief cities of Italy. Organized into companies, or guilds, of the different trades and manufactures, the city jewellers, bankers, and goldsmiths were renowned throughout the world. In cases, which were frequent, of civic disturbances and quarrels members of guilds rallied round their respective standards, and in Florence, as elsewhere in Italy, the nobles resided in strongly built fortresses.

153. The cities of Tuscany were grouped near Florence and Pisa, and in the neighbourhood of Milan, Pavia, Mantua, Lodi,

and Brescia were places of importance. Vincenza, Padua, and Trevisa were near Verona and Imola, Faenza, and Ferrara in the neighbourhood of Bologna. Although frequently at war with one another with varying results, yet, when at the height of their prosperity, several of these cities of Italy could vie with kingdoms in the extent of their wealth and commerce, their progress in art, and the splendour of their public buildings. In the eleventh century Southern Italy was invaded by the Normans who seized the lands then held in the Italian peninsula by the Saracens and the Eastern Emperor. Subduing Naples and Sicily, the Norman conquerors founded the kingdom of the two Sicilies which in A.D. 1195 was united to the dominions of the Hohenstaufens.

NORTHERN ITALIAN ROMANESQUE

DISTINCTIVE FEATURES

154. Gabled Porches and Deeply Recessed Openings.—The exteriors of the Lombardic buildings of Northern Italy were adorned with blind arches alternating with buttresses, with small arches carried on corbels, and with string courses enriched with saw-tooth or other crude ornamentation. Gabled porches, with columns resting on the backs of lions, were also common. High narrow round arches, generally deeply recessed, enclosed the doors and windows, and the coping of the front gable of the low-pitched roof was usually relieved with arcading that followed the slope of the gable. Internally piers, usually square in plan, separated the nave from the aisles, which were commonly built in two stories. There were often two or three semicircular apses, and a vaulted crypt was sometimes constructed under the presbytery.

EXAMPLE

155. Church of San Michele, Pavia.—The church of San Michele, at Pavia, Fig. 72, is an interesting example of a perfectly developed round arched vaulted church. Externally one of the most pleasing features of the design is seen in the circular

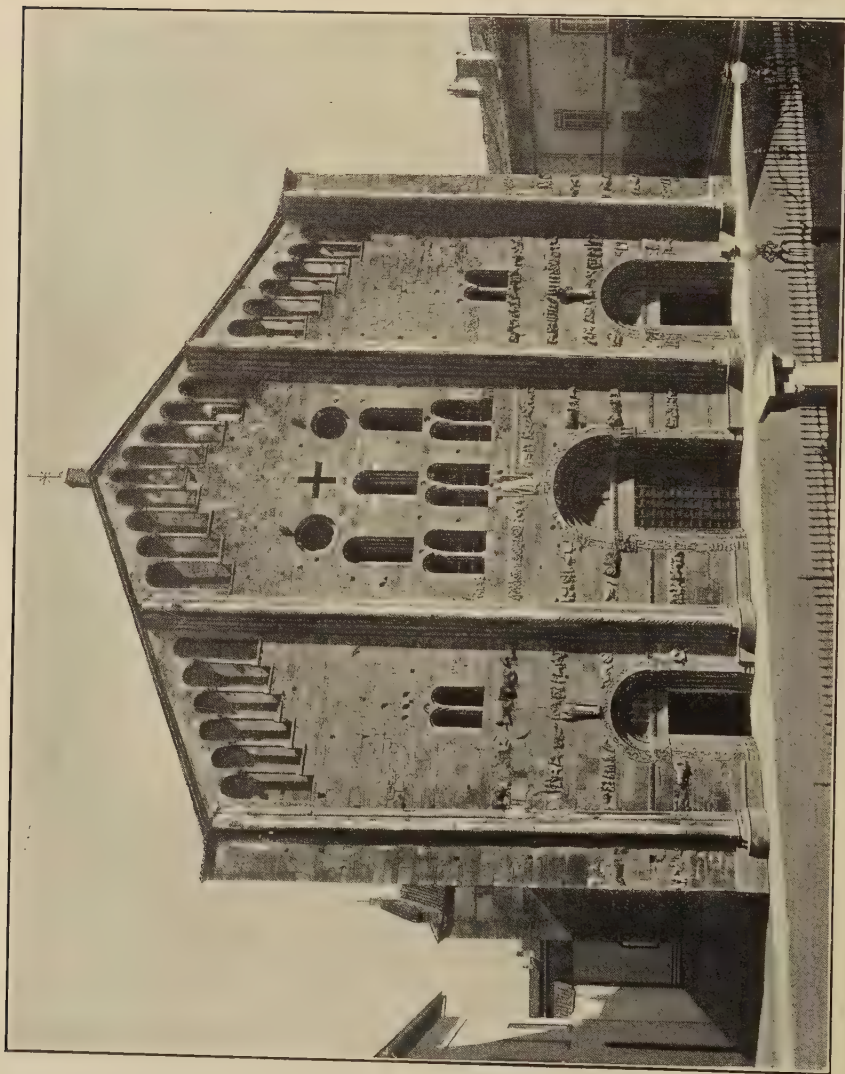


FIG. 72. CHURCH OF SAN MICHELE, PAVIA

apse, which has a gallery formed under its eaves broken into three divisions by coupled shafts springing from the ground and continued through the whole height of the building. The respective widths of the nave and aisles are emphasized on the west front by buttresses formed of groups of clustered columns. Internally the piers of the nave arcading are shafted to receive the vaulting ribs and the floor of the choir is raised considerably above that of the nave to admit of the construction of a vaulted crypt.

CENTRAL ITALIAN ROMANESQUE

DISTINCTIVE FEATURES

156. Wall Arcades, Coloured Marble Decorations.—Although not so monumental in appearance, on the whole the basilica churches of Central Italy were superior in design to those of Northern Italy. Wall arcades, built in a series of stages one over the other, were freely used for the ornamentation of the façades of the buildings. Other forms of ornamentation, including the almost universal use of coloured marble, suggest the influence of Byzantine art.

EXAMPLES

157. Buildings at Pisa.—The Cathedral of Pisa, with its leaning Tower, Baptistry, and the neighbouring *Campo Santo*, or cemetery, which contains a large and interesting collection of sepulchral monuments, combine to form a remarkably picturesque group of ecclesiastical buildings.

158. Cathedral, or Duomo, of Pisa.—The cathedral at Pisa, Fig. 73, is in many respects the finest example of Romanesque art in Central Italy. Commenced in the year 1067 and completed in 1118, it was built to commemorate the success of the Pisans when, in conjunction with the Normans, they fought to free Sicily from Saracenic rule. The church, which is planned in the form of a Latin cross, is 312 feet long and consists of a nave and double aisles, transepts, and choir. Twenty-four

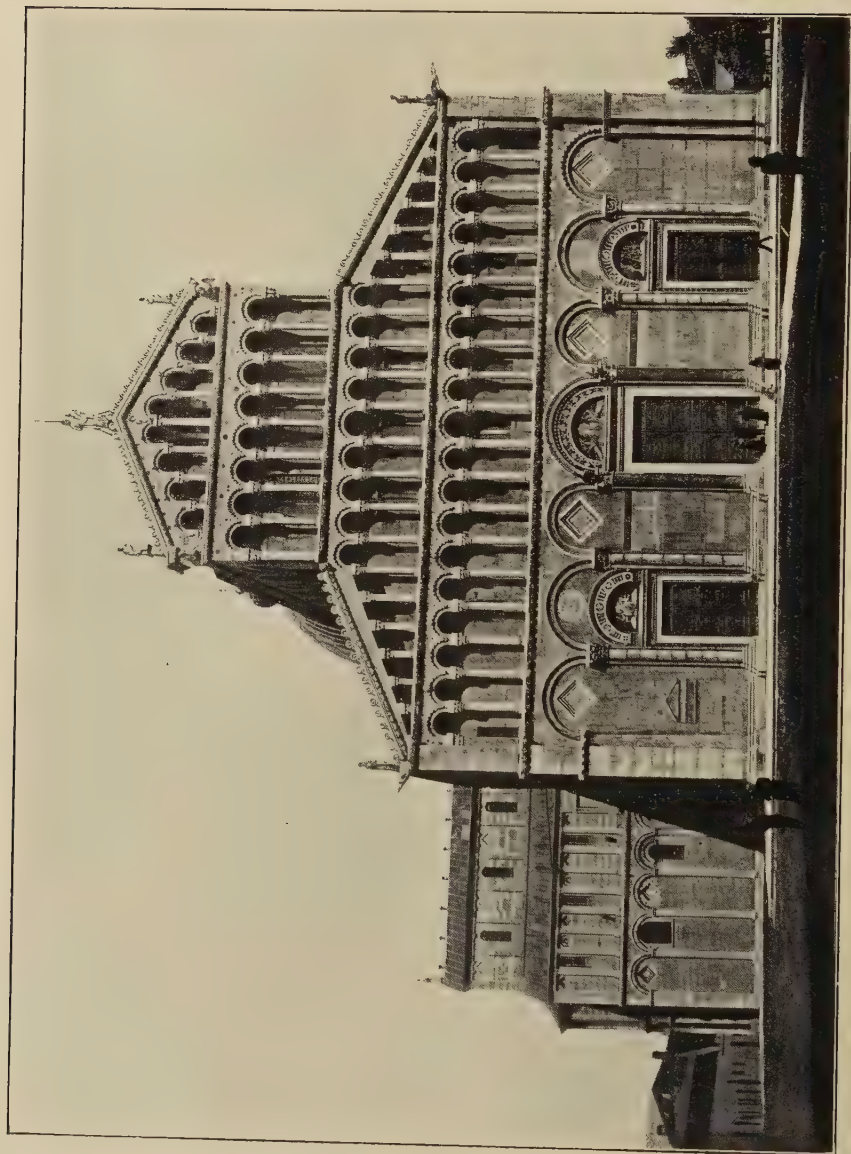
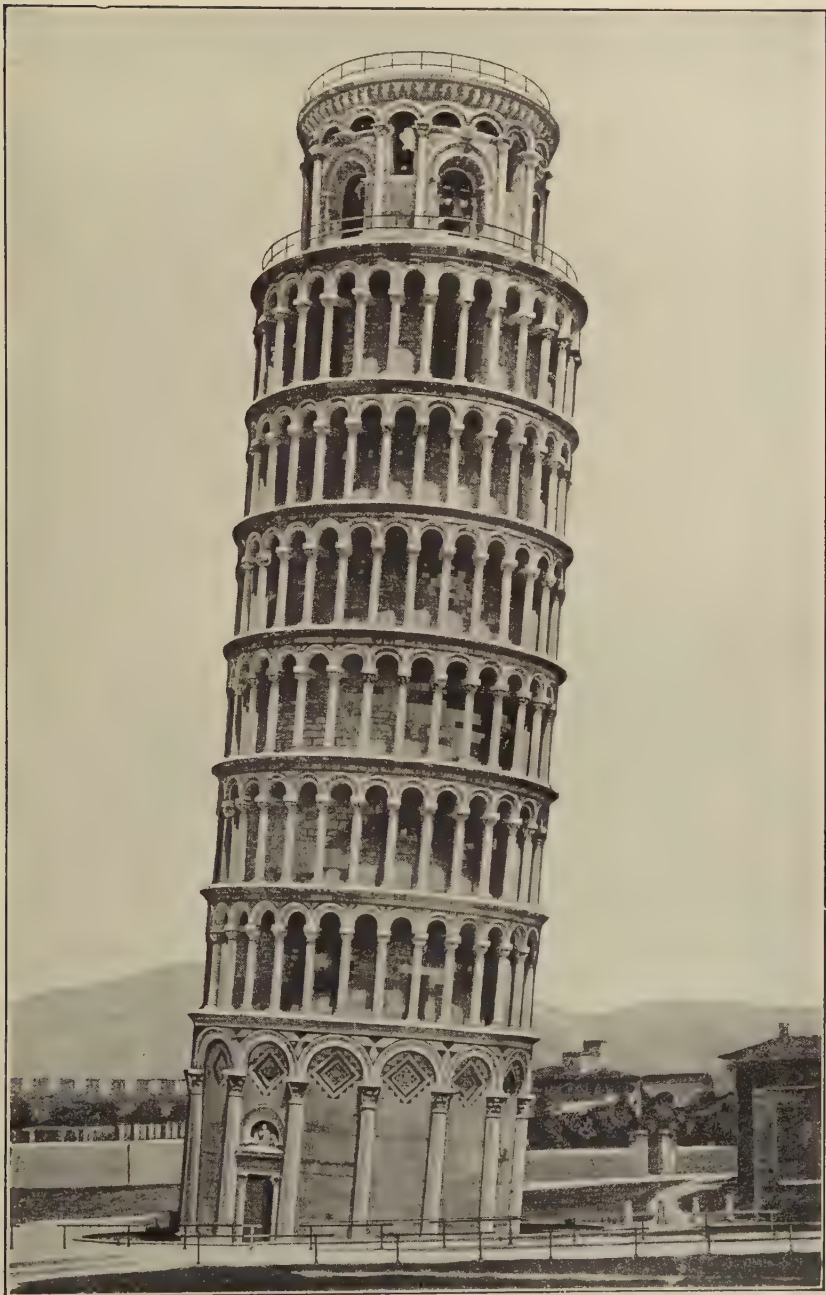


FIG. 73. CATHEDRAL AT PISA



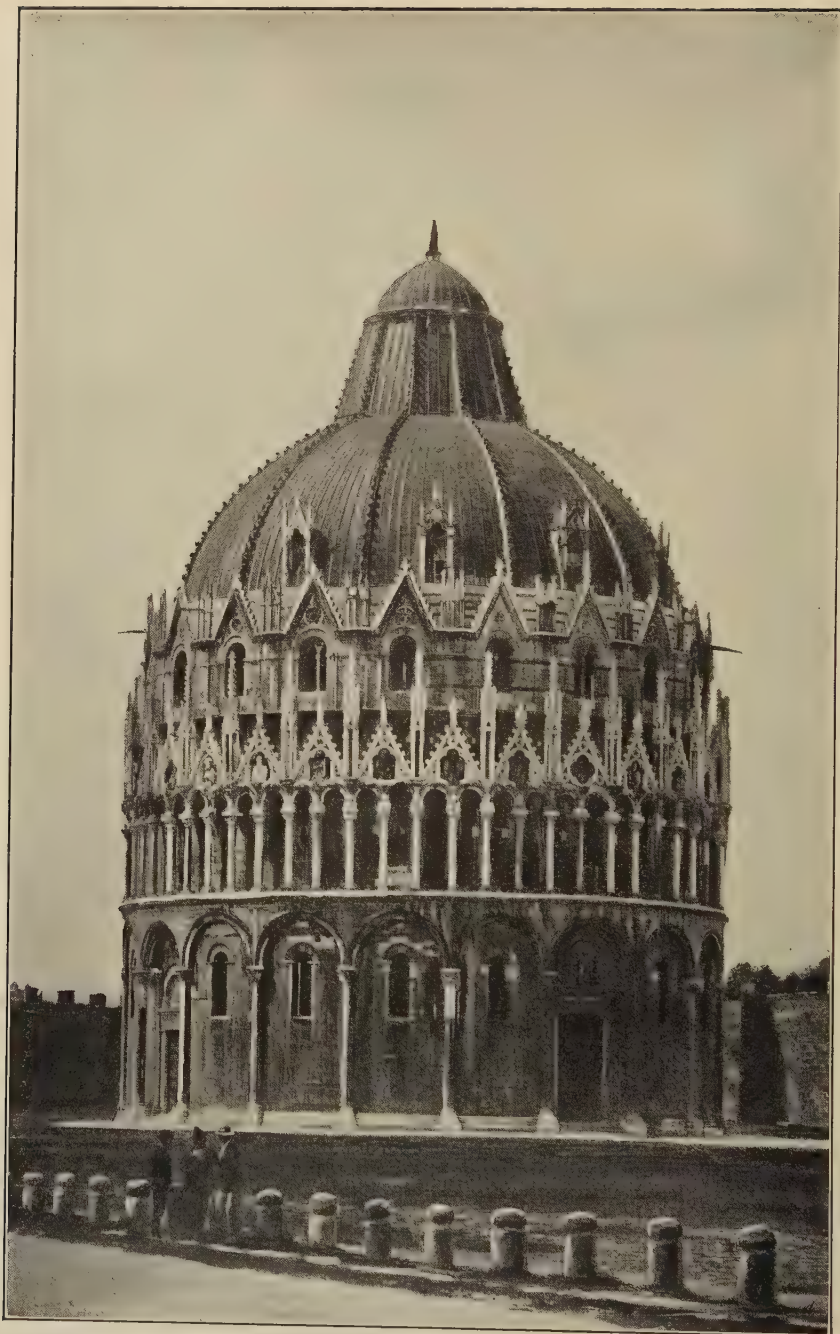


FIG. 75. THE BAPTISTERY AT PISA

Corinthian columns, twelve on each side, of red granite and marble separate the nave from the aisles. Round arches spring from the capitals of the columns and a deep moulding, continued in an unbroken line along the nave walling, which recalls the long horizontal lines of the early Christian basilica, separates the main arcading from the upper gallery, or triforium, and the clerestory. The nave is covered with a wooden roof and a flat ceiling. A later addition comprising an elliptical dome over the crossing dates from 1596. Four stages of arcading placed in the upper part of the west façade exemplify the highly decorative methods of building adopted by the Romanesque architects of Central Italy.

159. The Campanile, or Bell Tower, at Pisa.—This extraordinary structure, Fig. 74, which adjoins the eastern end of the Cathedral, was commenced in 1174. It is some thirteen feet or more out of the perpendicular owing to an imperfect foundation. The defect appears to have been discovered before the tower had been carried up more than about one-half of its present height and its builders were therefore enabled to take measures to ensure the stability of the structure. Cylindrical in form, 179 feet high, and 53 feet in diameter at the base, the tower consists of eight stages of columnar arcading which thus form a series of open galleries round the tower. The top stage, a later addition, is said to have been added in 1350.

160. The Baptistery, at Pisa.—This imposing circular building was commenced in 1153, but not completed before the fourteenth century. It is 90 feet in diameter within its walls, which are over 8 feet in thickness. An exterior view is given in Fig. 75 and a section and a plan in Fig. 76 (*a*) and (*b*). It is covered with a double brick dome, the inner structure being conical and the outer one hemispherical in form. The total height of the building is about 179 feet.

161. Cloisters of St. Paul's Church, at Rome.—The columns of the cloisters of St. Paul's Church, at Rome, Fig. 77, are richly inlaid with mosaics. Although dating from the twelfth century their details belong in reality to the Classic school of design.

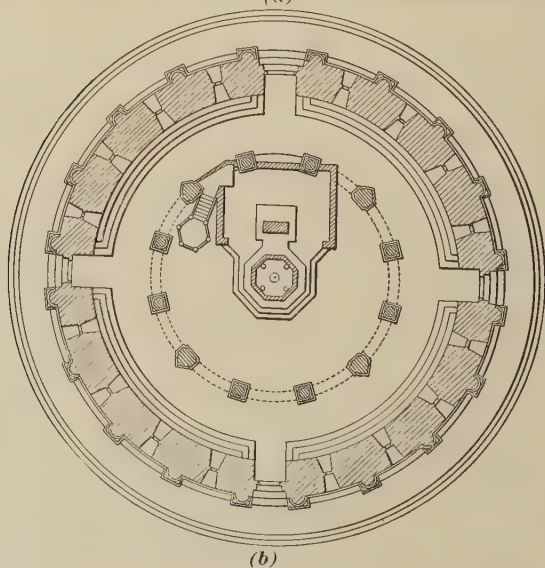
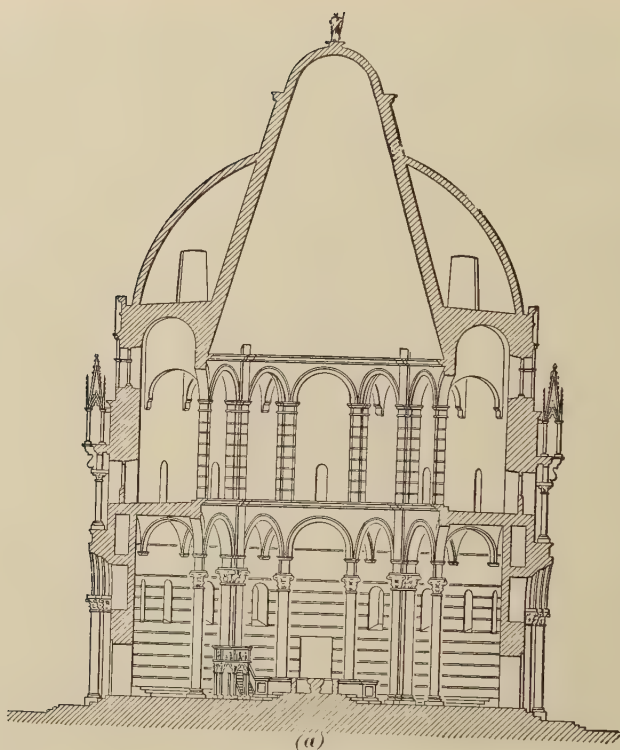


FIG. 76. BAPTISTERY AT PISA

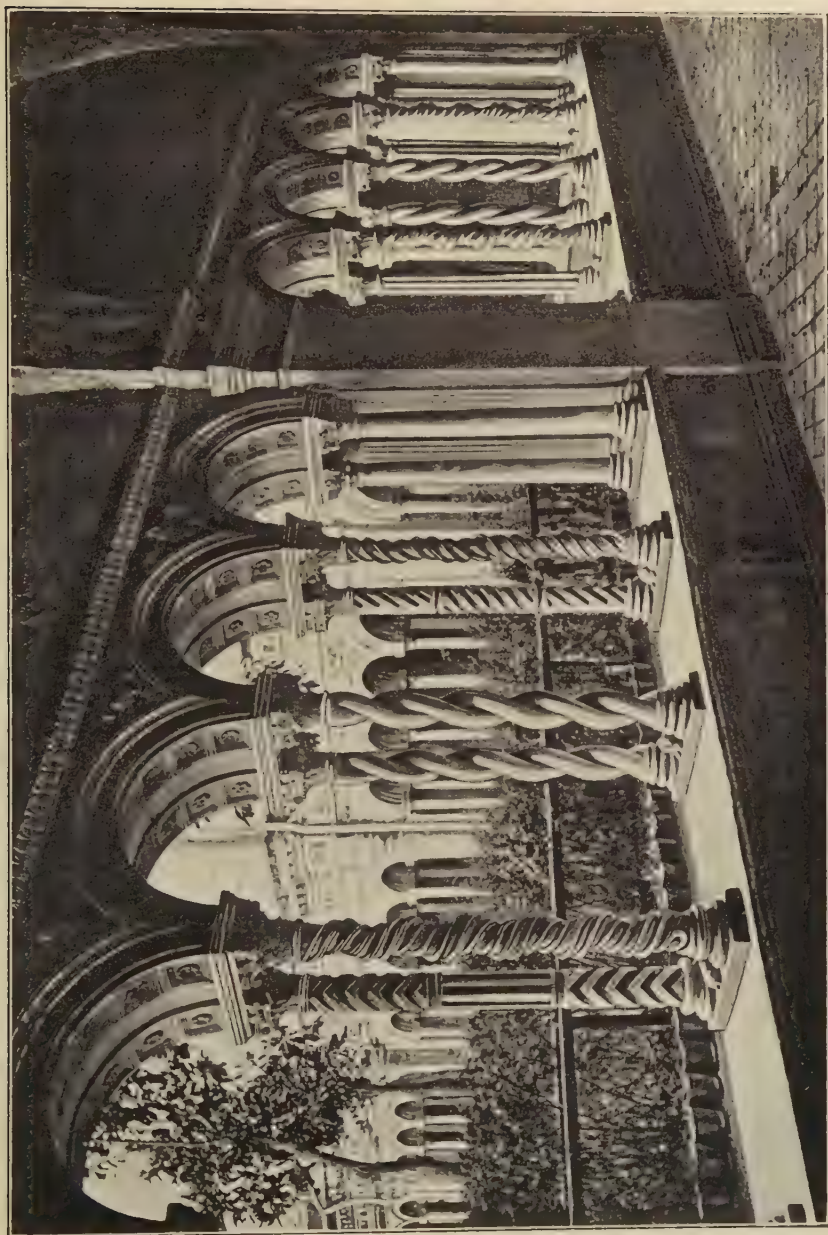


FIG. 77. CLOISTERS OF ST. PAUL'S CHURCH. ROME

SOUTHERN ITALIAN ROMANESQUE

HISTORICAL AND ARCHITECTURAL NOTES

162. Historical.—The varied historical and architectural traditions of Sicily have left their mark not only on the Romanesque buildings of the island but on many of the churches of the mainland of Southern Italy.

Among the notable epochs of the history of the Island of Sicily are : (1) the Greek occupation 735 to 210 B.C. ; (2) the Roman dominion 210 B.C. to A.D. 466 ; (3) the sovereignty of the Vandals and Goths A.D. 466 to 535 ; (4) conquest of the island by the Eastern Empire A.D. 535 to 941 ; (5) the Saracenic occupation A.D. 941 to 1072 ; (6) the Norman invasion A.D. 1072 to 1194 ; and (7) annexation of the island by the Emperor of Germany A.D. 1194 to 1266.

163. Architectural Features.—As the result of its chequered history, the Norman Romanesque architecture of Sicily clearly shows an amalgamation of Byzantine, Arabic, and Norman elements which is altogether unique.

EXAMPLES

164. Cathedral of Monreale.—The cathedral of Monreale in the environs of Palermo is the finest of the many buildings erected by the Normans in Sicily. Built in 1174–1189 and occupying a commanding position on the brow of a hill, the church exhibits in many of its details a profusion of that interesting blending of Byzantine and Saracenic influence which is one of the special charms of the Romanesque art of Southern Italy. Planned in the form of a Latin cross with three apses, its nave, Fig. 78, is divided from the aisles by monolithic columns of granite, taken from older buildings, supporting pointed arches. The lower portions of the walls are covered with marble panels and bands of mosaic of great beauty and variety of design ; elsewhere mosaics, depicting scriptural subjects intermixed with

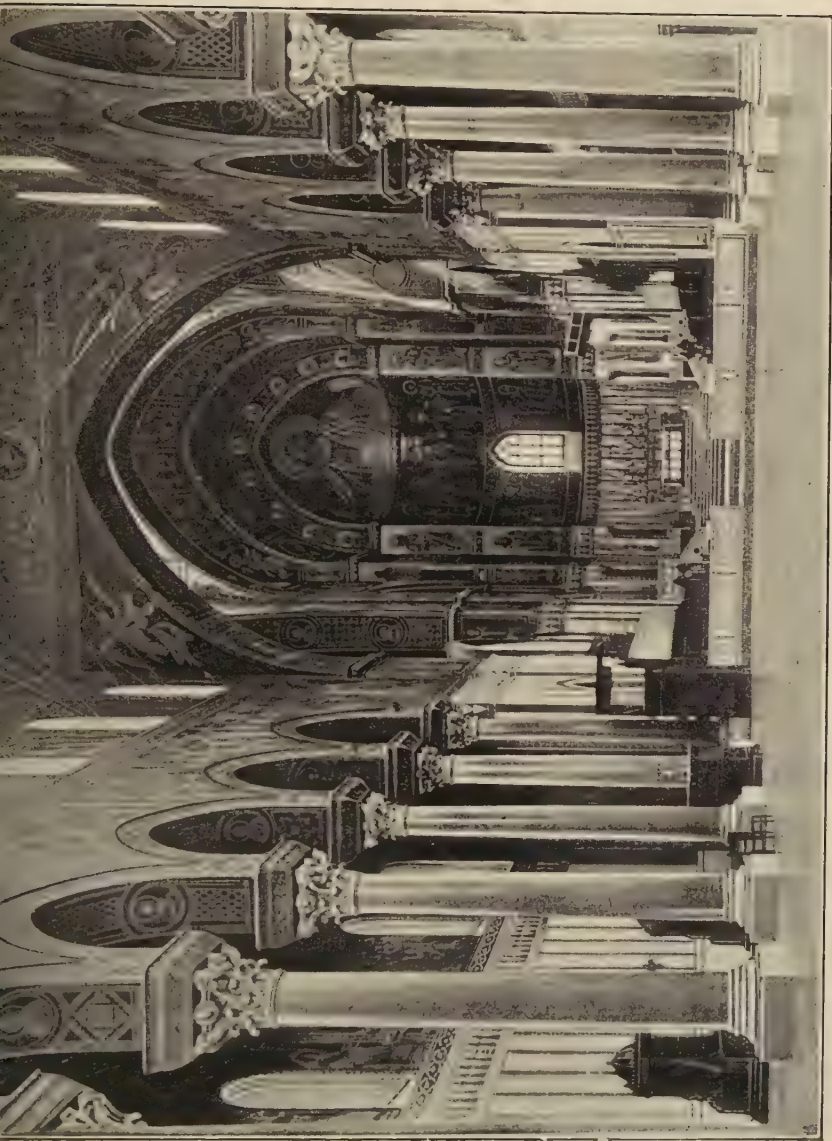


FIG. 78. INTERIOR, CATHEDRAL OF MONREALE, SICILY



FIG. 79. DOORWAY, CATHEDRAL OF MONREALE



FIG. 80. CLOISTER, BENEDICTINE MONASTERY. MONREALE

arabesques and ornaments in gold and colour, are freely used for the internal decoration. The roof is of wooden construction. Saracenic ornamentation, as seen in Fig. 79, appears in the interlaced borders that surround the principal doorways.

165. With the exception of the cloister, nothing remains of the original Benedictine Monastery of Monreale, the existing buildings being of an entirely modern character. The old cloister, which surrounds a court 169 feet square, consists of a series of pointed arches supported by alternately plain and decorated white marble columns. Diaper work enrichment is found in the arches and the columns are ornamented either with mosaics, applied in vertical or spiral bands, chevrons in relief, or with

delicately carved arabesques and foliage, as seen in Fig. 80. The beautifully carved Corinthian capitals are treated with much originality.

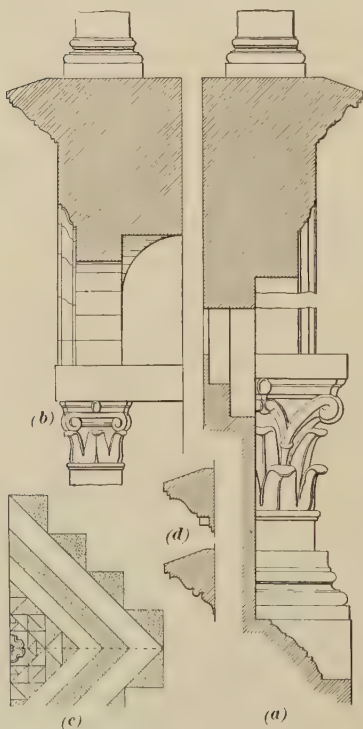


FIG. 81

ITALIAN ROMANESQUE DETAILS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

166. Plans.—The plans of the churches built in the Italian Romanesque style were almost always based on the basilicas of ancient Rome, the naves being separated from the aisles by piers or columns. Apses were usually placed at each end of the building and vaulted crypts formed under the raised floor of the choir. Detached bell towers

adjoined many of the churches.

167. Walls.—The few architectural embellishments of the external walling comprised blind and open arcades, slender columns, or pilasters, and gabled porches with columns resting on the backs of lions. External buttresses were few and unimportant, the thrust of the vaulting being counteracted by internal piers.

168. Roofs.—Vaulted roofs were used in the North, but in Central and Southern Italy the churches usually had flat wooden ceilings.

169. Columns.

The capitals of the columns sometimes followed

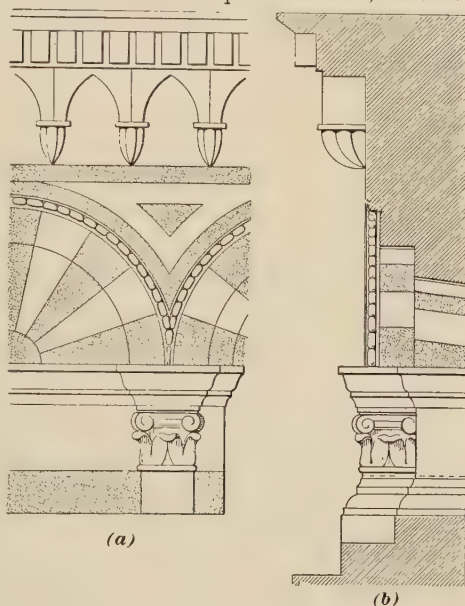


FIG. 82

classic models; in other cases the basket capitals of Byzantine art were copied.

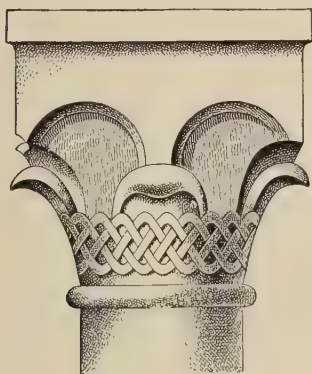


FIG. 83

170. Openings.—The small openings in the walls for windows, either circular or round-headed in form, were generally arranged in single lights. Doors were set in round arched portals.

171. Mouldings.—The mouldings, as a rule small and unimportant, were rough adaptations of classic forms.

172. Ornamentation.—In North Italy the ornamentation was of a free nature, carved representations of leaves and grotesque

monsters being common. In the decorative details of the buildings of South Italy the influence of Saracenic and Byzantine art is very noticeable. Figs. 81 and 82 illustrate examples of Italian Romanesque ornamentation from the campanile, or tower of Pisa, a general view of which is shown in Fig. 74. The caps and bases of the engaged Corinthian columns of the lowest stage of the tower are illustrated in Fig. 81 (*a*) and at (*b*) there is a fragmentary section, through the wall, of the next stage which is surrounded by an arcade of Ionic columns.

173. Fig. 81 (*c*) illustrates the lozenge-shaped panels inserted immediately under the arches of the ground-floor arcading, and Fig. 81 (*d*) shows sections of the horizontal string courses that mark the positions of the second, third, and fifth stages of the tower. Details of the top stage are shown in Fig. 82 (*a*) and (*b*). In this illustration the arches immediately under the crowning, corbelled, and dentilled cornice are shown in elevation at (*a*) and in section at (*b*). Another and less refined form of Italian capital is illustrated in Fig. 83.

ENGLISH ROMANESQUE OR NORMAN ARCHITECTURE

NOTES ON ENGLAND

GEOGRAPHICAL AND HISTORICAL

174. Geographical.—England, which in conjunction with Wales forms the southern part of the island of Great Britain, covers an area of about 58,000 square miles. As will be seen on reference to Fig. 84, England is surrounded by the North Sea on the east, St. George's Channel on the west, and on the south by the English Channel. Its much indented coast line has been estimated to cover over 2,000 miles. Owing to its high and equable temperature, the climate of England is milder than that of any other country of the same latitude on the continent of Europe.

175. Historical.—Little is known either of the country or of the manners and customs of the inhabitants of Britain prior to the Roman conquest. But about a century after Cæsar's temporary occupation of the country, in 55 and 54 B.C., Britain became a Roman province, and towns, bridges, and roads were constructed in all parts of the conquered land. Early in the fifth century, when the Goths were advancing against Rome, the legions stationed in England were recalled to Italy.



FIG. 84

176. Taking advantage of their opportunity, the northern Celts at once commenced to swarm over the deserted fortifications

and to devastate the defenceless country. In their extremity the Britons applied for assistance to Horsa and Hengist, the leaders of a band of Teutonic adventurers, who happened to be cruising off the coast, but after having subdued the Celts the Teutons rewarded themselves by seizing the land they had thus saved,

177. Then fresh hordes of Teutonic barbarians, chiefly Angles, or English, and Saxons poured into Britain from their homes at the mouth of the Elbe and drove the remaining Britons into Wales. The small pagan kingdoms which the newcomers established, known as the Saxon Heptarchy, were continually at war with one another but, after adopting Christianity, they finally became one nation under Egbert, the first king of England, in A.D. 827.

178. During the ninth century England was ravaged by other bands of northern pirates, the Danes, who were eventually beaten back by Egbert's grandson, Alfred the Great, A.D. 871 to 901. But, bent on conquering the country, the Northmen returned a century later, and their king Canute, or Knut, gained the throne of England.

179. On the death of the last descendant of Canute, in 1042, Edward the Confessor, who had been educated in Normandy, was called to the throne, and on his death, in 1066, Harold was chosen king. But William, Duke of Normandy, claiming that Edward had promised him the succession to the throne, invaded England at the head of a powerful army and having defeated Harold, who was slain on the battlefield at Hastings, was crowned in Westminster Abbey on Christmas Day in 1066.

180. The introduction of the feudal system into England followed the Norman Conquest of the country. Most of the lands and domains of the Saxon nobles were confiscated and bestowed on William's followers who soon filled all the important offices in Church and State. Norman workmen and traders flocked across the Channel and Norman manners and customs prevailed throughout the country. Thus, for many years after the Norman Conquest there were two nations living in England speaking different languages. Yet as both nations were of

Teutonic extraction, and thus kinsmen, the work of union speedily began. And as in course of time the people became united in one nation, so also their languages blended, and from the fusion was evolved the English tongue of to-day.

181. Although King of England, William still retained his dukedom of Normandy and hence remained a vassal of the French king. This complication of English and French interests became a frequent source of strife between the two countries. The kings of the Capetian dynasty were often compelled to wage war with a vassal more powerful than themselves while, on the other hand, the English sovereigns sought to dismember and conquer France. Many centuries elapsed before the English gave up their last stronghold in France, and during that long period protracted wars between the two countries were frequent.

182. Ruling his new realm with a rod of iron, William the Conqueror succeeded in curbing the power and ambitions of the nobles whom he had created, but in succeeding reigns the latter acquired great power and, protected by the massive walls of their castles, plundered the populace with impunity and caused them to appeal to the crown for protection.

183. Under Henry II order was re-established, the army organised, the law reformed, and many of the castles of the turbulent barons razed to the ground. New barons ready to make common cause with the nation were created, but the king alienated the loyalty of his subjects by a protracted quarrel with the ardent churchman Thomas à Becket, and all sections of the community began to oppose the increasing power of the monarchy.

184. Matters were brought to a crisis by the exactions of John, the next king, who imposed taxes at pleasure and plundered rich and poor. The whole nation rose in rebellion and taking up arms the barons compelled the king in A.D. 1215 to grant the famous Magna Charta.

185. This notable event marked the growth of constitutional liberty. Henceforth the power of the king was much restricted. Under the provisions of the Great Charter he was only allowed

to impose taxes when the barons granted the privilege for public purposes, and no freeman was allowed to be punished, unless judged guilty by his countrymen, of the crime with which he was charged. The courts were to be open to all ; justice was neither to be sold, refused, nor delayed, while the Church was effectually safeguarded against the interference of the king. In short, Magna Charta laid the foundation of modern English liberty.

186. As will be understood from the above brief sketch of the history of England, from its commencement until the beginning of the thirteenth century, the sequence of its architectural development differed materially from that which prevailed in France, Germany, and Italy. In these lands the progress of architecture can be traced, step by step, from the period of Roman dominion until our own day. But the complete severance of Britain from Roman influence, which followed the settlement in this country of Angles, Saxons, and Danes, prevented any similar continuity of architectural art inasmuch as few Roman buildings survived the shock of the successive conquests of England.

187. The existing remains of the Roman occupation of Britain consist of structures of an engineering rather than of an architectural character. An example is seen in the relics of the Great Wall built across the north of England to defend the Roman provinces of Britain against the inroads of the northern barbarians. From time to time remains of portions of Roman buildings have been disinterred in many parts of the kingdom, but it is the rarity of whole buildings, or even of large parts of buildings, of the Roman period that has made it difficult to trace the course of English architecture with any certainty.

188. During the 500 years which elapsed between the conversion of the country to Christianity and the Norman Conquest, churches were erected in the Roman fashion of the time. But the existing great cathedrals and monastic buildings of England were nearly all built shortly before, or soon after, the Norman Conquest to replace these earlier structures which were doubtless constructed in the Romanesque style common to all Western Europe.

189. An interesting example of an ecclesiastical building, erected long before the Norman Conquest, exists in the old church of Bradford-on-Avon, built between the years 675 and 709, which contains many features common to early Romanesque work of all countries. In England early Romanesque or, as it is sometimes called, Saxon architecture is characterized by the roughness of its walling, the absence of buttresses, and by the free use of quoins of wrought stone, placed alternately flat and on end, a system of ornamentation known as "long and short work." The walls were also often relieved with flat vertical strips of stone projecting slightly from the general surface and the heads of doors and window openings with slightly projecting bands arranged in the form of triangles and semicircles.

190. Norman Romanesque art was introduced into England by Edward the Confessor, whose great church at Westminster, consecrated in 1065, is the earliest known example of the style.

ARCHITECTURAL EXAMPLES

CATHEDRALS AND CHURCHES

191. Characteristics.—The English form of Romanesque art, known as Norman architecture, prevailed in this country from 1066 to about the end of the twelfth century. Early examples of the style, as, for instance, the huge abbey building of St. Alban, the great church at Norwich, and the transepts of Winchester Cathedral, are distinguished by solidity of construction and general severity and massiveness of design. The elements of these buildings, and of others of the same period comprise a plan in the form of a Latin cross and a large central and two western towers. As the style developed changes gradually appeared, the extreme severity of the earlier examples disappearing in the efforts made to obtain increased lightness and decorative effect. With this object in view shafts were placed in the jambs of the doors and windows, the latter often being coupled under a single arch, and a system of surface moulding of considerable richness was devised.

192. **Peterborough Cathedral.**—Peterborough Cathedral is well known as one of the finest examples of Norman work in England. Fig. 85 illustrates, by means of the elevations at (a) and (b), the internal and external architectural treatment of one

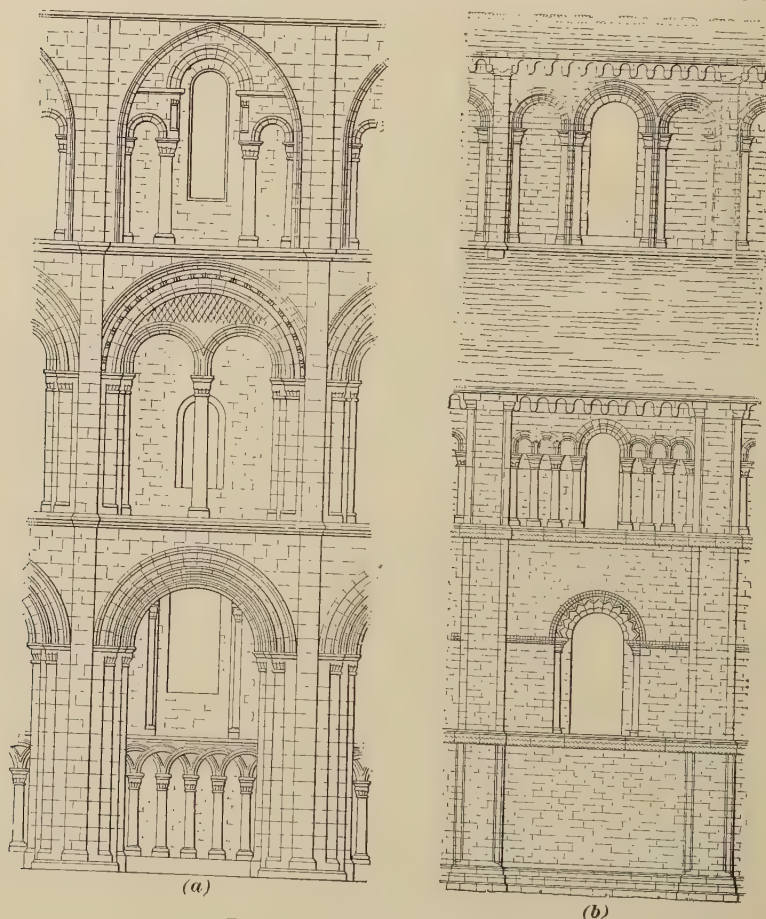


FIG. 85. PETERBOROUGH CATHEDRAL

of the bays of the choir. The present building was the successor of two earlier churches, the first of which, dating from A.D. 656, was destroyed by the Danes some 200 years later, and the second, founded in 971, burnt down in 1116. Commenced in the year



FIG. 86. INTERIOR, PETERBOROUGH CATHEDRAL

1117, the choir is the oldest part of the cathedral, the nave of which dates from 1177. The west façade, with its lofty recessed arches, 81 feet in height, is an early thirteenth-century addition

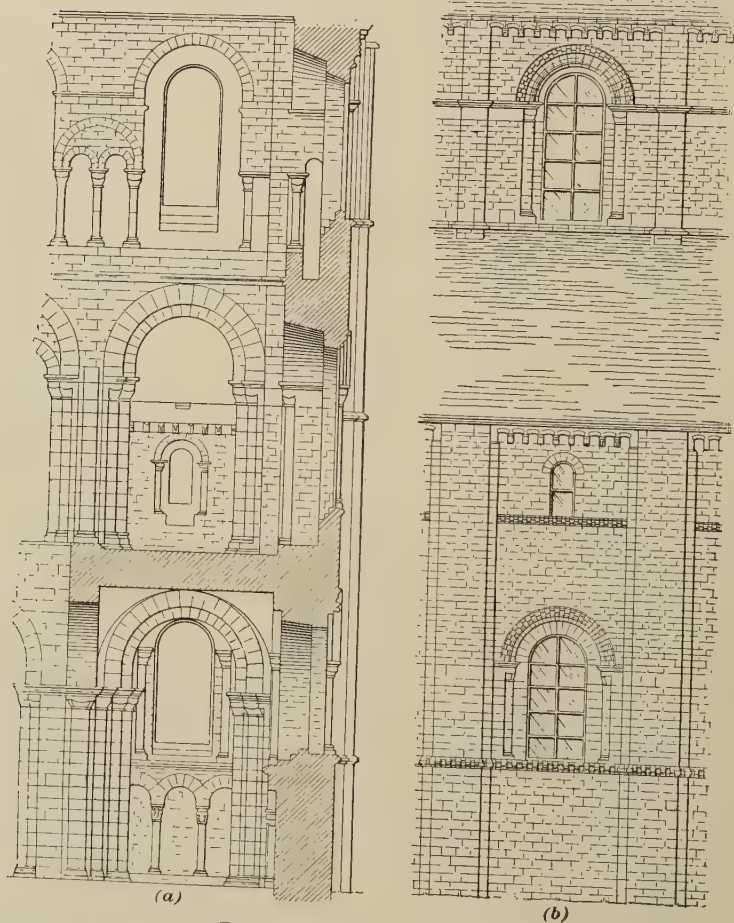


FIG. 87. WINCHESTER CATHEDRAL

and the present fourteenth-century central tower took the place of a former Norman lantern. In addition to the Norman arcade, the triforium and clerestory of the choir are also illustrated in Fig. 85. The flat ceiling and the tracery of the windows of the



FIG. 88. CHURCH AT IFFLEY

apse, inserted at a later date, are shown in the interior view of the choir, Fig. 86.

193. Winchester Cathedral.—Winchester Cathedral, Fig. 87, was founded in 1079 on the site of a Saxon church of the seventh

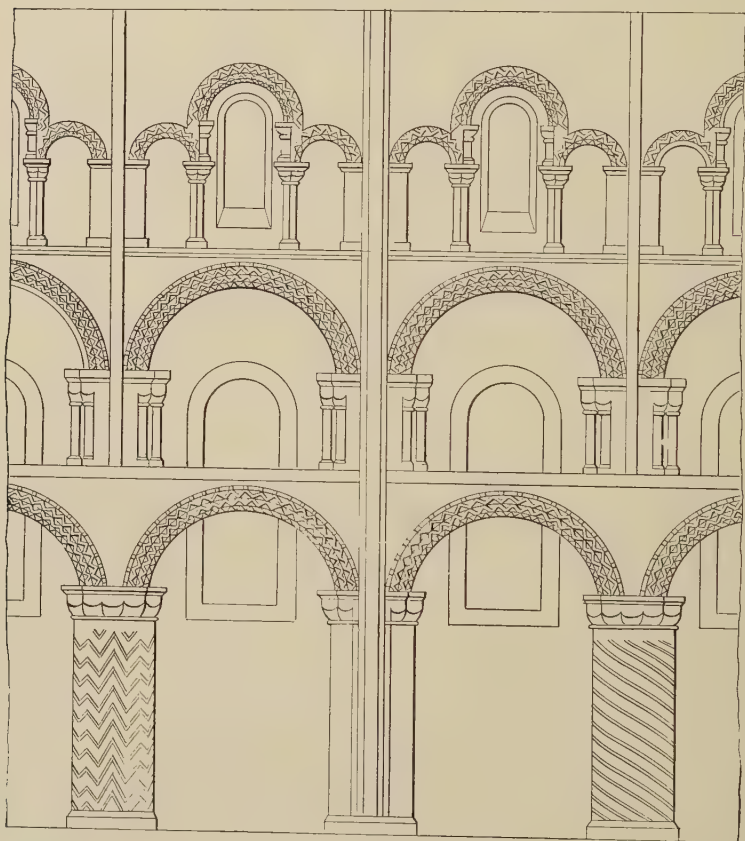


FIG. 89. WALTHAM ABBEY, ESSEX

century. Originally a Norman structure, as shown by Fig. 87 (*a*) and (*b*), which represent a sectional elevation and an exterior view of one of the transepts, the cathedral now incorporates almost every phase of later mediæval art. The conversion of the nave from Norman to its present style was commenced in

the fourteenth and completed late in the fifteenth century. This great church measures about 550 feet within its walls from east to west and its breadth across the transepts is 208 feet.

194. Iffley Church.—Iffley Church, near Oxford, Fig. 88, is a well-preserved and interesting example of Norman architecture dating from the middle of the twelfth century. Although various additions to the building have been made from time to time yet, as seen in the illustration, its western façade still remains a good example of pure Norman art. The richly decorated central doorway, flanked by semicircular-headed panels, is surmounted by a large circular light, above which three characteristic Norman windows combine in the formation of a very effective design. While the upper part of the tower is of a later period, the north and south doorways preserve the characteristic details of the western façade.

195. Waltham Abbey, Essex.—A portion of the interior of the nave of the former great Abbey Church of Waltham is shown in the longitudinal section, Fig. 89. This fine example of early Norman work is said to have formed part of the original building erected by Harold the last Saxon king.

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

196. Plans.—Based mainly on French models, the Norman churches of England were generally longer and narrower than their prototypes and the east ends usually square instead of apsidal. The transepts projected boldly from the north and south aisles and a large tower was usually placed over the crossing.

197. Walls.—Although very massive in appearance the walls, cased with wrought stone and filled in with an inner core of rubble, were not always of good construction. Norman buttresses, as seen from Fig. 90 (*a*) and (*b*), which illustrates two

characteristic examples, had but slight projection and were comparatively unimportant features.

198. Roofs.—In some cases the timber roofs of Norman buildings were of steep pitch, but even when the framing was left

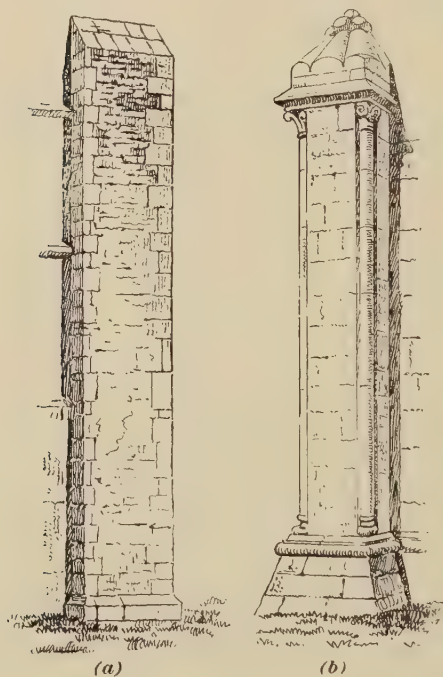


FIG. 90

open to view the constructional timbers were rarely ornamented. Cylindrical or barrel and groined vaults were both used.

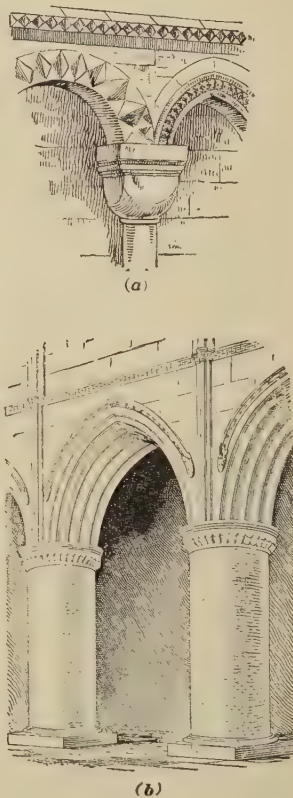


FIG. 91

199. Arcades.—Although, as seen from Fig. 91 (a) and (b), the use of pointed arches was general in the late transitional architecture of the time, yet the round-headed arch may be regarded as the chief architectural characteristic of the Norman period. The massive supporting columns were frequently circular in plan, as in Fig. 91 (b), and their capitals either followed

the form of the shaft, as in (b), or else they were of the *cushion* type finished with a square abacus, as at (a), but clustered columns and compound piers were also used.

200. Windows.—In its simplest form the Norman window consisted of a single semicircular-headed opening with deeply splayed internal jambs, as in the example from Waltham Abbey, shown in Fig. 92. Mullions were unknown, but large openings were occasionally divided by a central shaft, as shown in Fig. 93 (a). With the development of the style the windows increased in size and richness, the arches were recessed in two or three planes and shafts and much

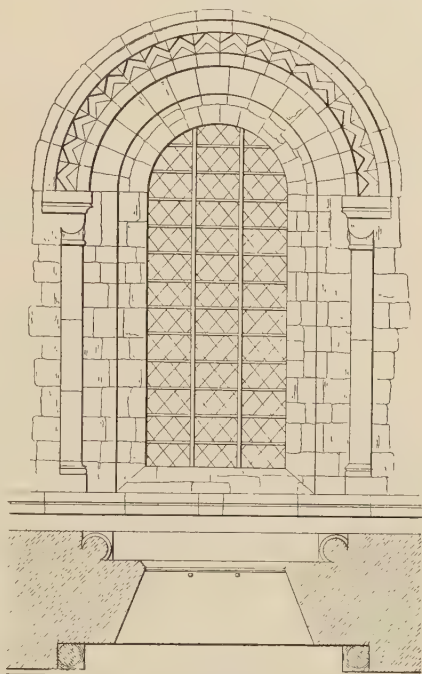
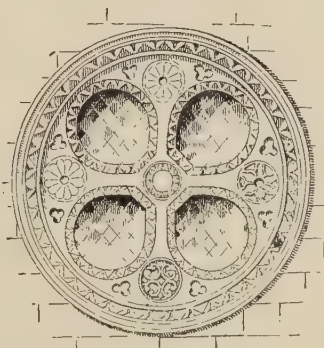


FIG. 92



(a)

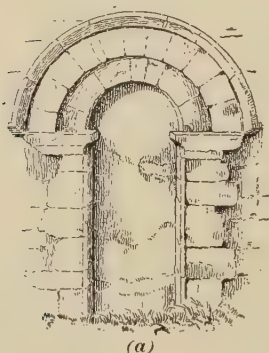


(b)

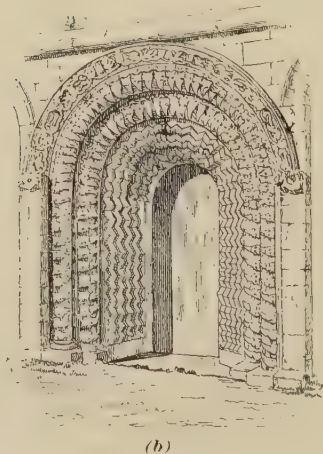
FIG. 93

additional carved ornamentation was introduced. The plain circular openings of early Norman times at a later period were transformed into *wheel* windows, Fig. 93 (b), having shafts radiating from the centre.

201. Doorways.—Occasionally flat-headed and covered with a plain stone lintel, Norman doorways were usually finished with a round arched head springing either from plain *imposts*, which are horizontal mouldings at the top of columns, pilasters, and piers, as in Fig. 94 (a), or with the side or jamb mouldings of the opening continued to the ground in plain unbroken lines, as in Fig. 88 and Fig. 94 (b). Another common arrangement of doorways comprised two or more recessed arches and a corresponding number of shafts in the jambs.



(a)



(b)

FIG. 94

202. Mouldings.—Norman cornices were often formed by projecting the upper part of the wall on brackets or corbels on which grotesque heads were carved, the intervening spaces being filled with small projecting round-headed arches springing from corbel to corbel. The earliest moulding, the circular *bowtel* worked on the edge of the stone, is shown in Fig. 95 (a) and (b), at c, in the profiles of these arch mouldings. A bowtel, alternating with a hollow, was a favourite Norman moulding.

203. Richness of effect was not obtained by increasing the number and variety of the component members of a moulding, but by a profusion of ornamentation

worked on its surfaces, as seen in the arch moulds, Fig. 95. Endless varieties of the *chevron* or zig-zag enrichment, shown at *d*, in Fig. 95 (*a*) and (*b*), continued to be used after other ornaments of its date had disappeared. As a rule the string courses of the Norman style consisted of plain projecting courses of stone splayed on one or both sides.

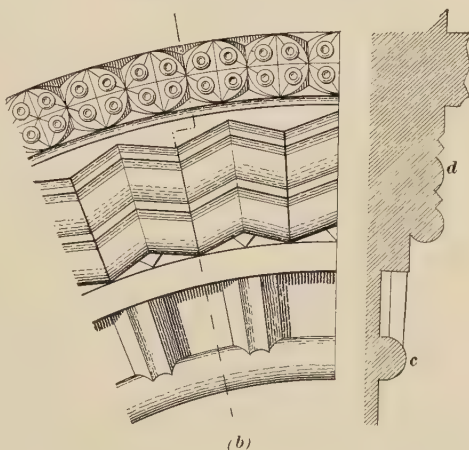
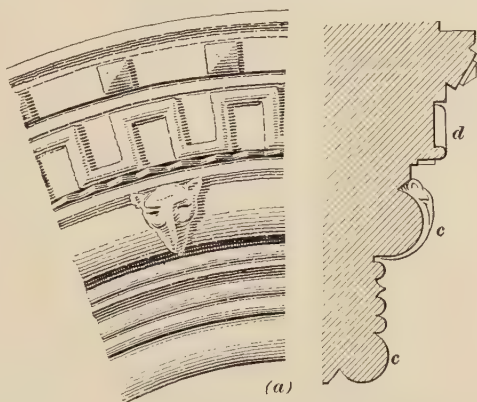


FIG. 95

and shown in Fig. 96 are the following: (*a*) is the *chevron*, (*b*) the *hatched* moulding, (*c*) and (*d*) *billet* mouldings consisting of two or more courses of small projecting cylinders or rectangular figures projecting from a flat or hollowed surface, (*e*) the *nail-head*, and (*f*) the *cabie* moulding.

205. Other examples of Norman ornamentation are illustrated in Fig. 97, in which (*a*) is the *pellet*, (*b*) the *lozenge*, (*c*) the *chain*,

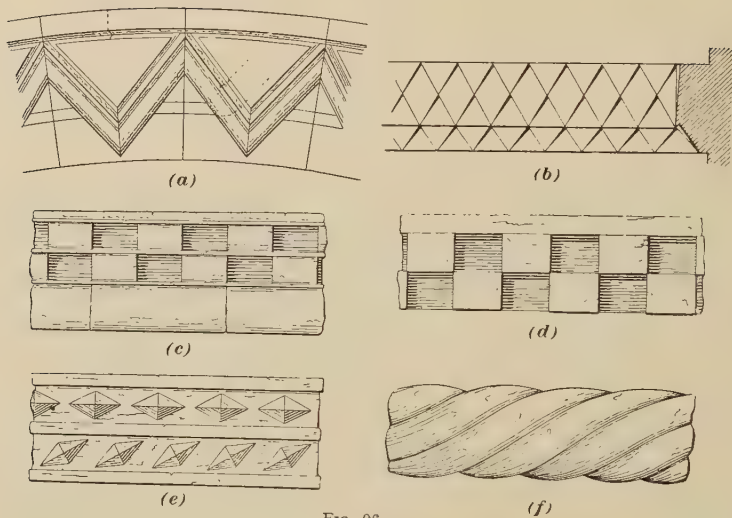


FIG. 96

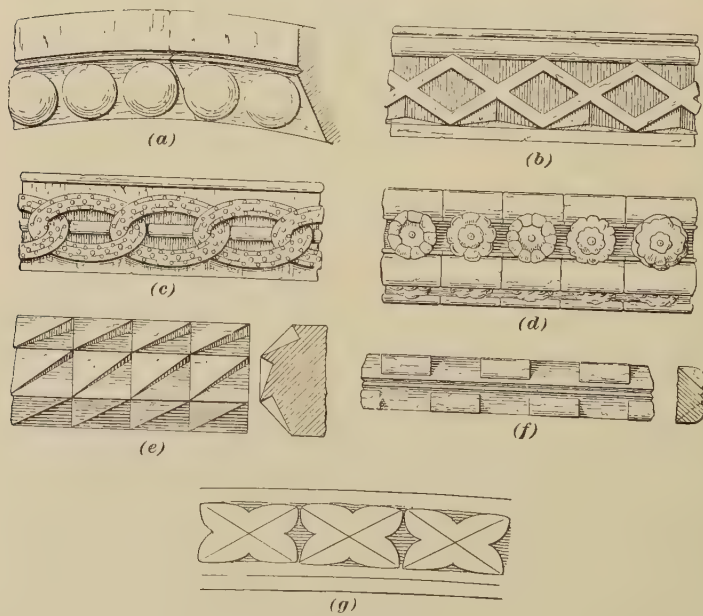


FIG. 97

(*d*) the rose, (*e*) the hatched moulding in a more elaborated form, (*f*) a string course relieved with cylindrical billets, and (*g*) a small floral enrichment inserted in a hollow. The *quatrefoil*, or square cross, with rounded arms was a favourite architectural form in early Norman work and the *trefoil*, or three-lobed arch, is to be seen in a Norman doorway at Ely and in some carved panel reliefs at Lincoln Cathedral. Sculpture was very rarely used in the early stages of Norman architecture in England, but later it was often introduced for the adornment of buildings erected in this variety of Romanesque art. Although with the development of the style the massiveness of earlier examples gave place to buildings of increased lightness of construction and grace of outline, yet spires and pinnacles were seldom, if ever, used. Small turrets with conical tops or steep pyramidal stone roofs were, however, common features of Norman buildings. Toward the commencement of the twelfth century it became customary to relieve the plain wall surfaces of the interiors of the churches with alternating courses of stonework of two or more colours arranged in patterns. Wall paintings illustrating scenes from the Bible also adorned many of the larger structures. Examples of this type of Norman ornamentation are to be found in the walls of the choir at St. Alban's Abbey and in a crypt chapel at Canterbury Cathedral the entire scheme of painted ornamentation as applied to pillars, walls, and vaults may still be traced.

HISTORY OF ARCHITECTURE

(PART 3)

GOthic ARCHITECTURE

ORIGIN AND DEVELOPMENT

EVOLUTION FROM ROMANESQUE STYLE

1. **National Influences.**—The general adoption of Romanesque art by France, Germany, Italy, England, and other countries paved the way, through Christian Europe, for the introduction of the succeeding style known as *Gothic* or, as it is sometimes called, *Christian Pointed Architecture*.

2. Gradually evolved from the Romanesque style, of which it was the natural outgrowth, Gothic architecture appears to have been a product of the twelfth-century civilization of France. Owing, in some measure, to the varying nature and quality of the building materials and, to a greater extent, to racial and climatic differences, many local peculiarities are observable in the Gothic buildings of different parts of Europe. Yet the fundamental principles of design and construction are essentially the same in each country, and the points of similarity greatly outnumber the points of difference to be found among the magnificent Gothic monuments erected in France, Germany, England, and elsewhere during the thirteenth, fourteenth, and fifteenth centuries.

3. **Defects of Romanesque Architecture.**—In the Dark Ages churches built in various parts of Western Europe were very similar in arrangement and appearance. As a rule, the stability of these structures was dependent, as in the old Roman buildings, on the sturdy walls and colonnades that supported the solid roofs, and the consequent massiveness of the numerous points of support caused a general air of heaviness and gloom. This defect, primarily due to the system of construction that was applied to the vaulted ceilings, impelled the church architects of Northern France to seek another and lighter method of roof vaulting under which the thickness of the weight-receiving piers could be safely reduced.

BEGINNING OF GOTHIC ARCHITECTURE

4. **Increase in Height and Width of Naves.**—The solution of this constructional problem was found with the discovery that the naves of churches could be made as high and as wide as desired, provided the piers that supported the vaulting were sufficiently strengthened externally above the level of the aisle roofs. The application of ordinary wall and flying buttresses to this specific purpose led to the rise of the pointed architecture that was destined to prevail for over three centuries.

5. The substitution of ribs for the plain groins of the early intersecting vaults, and the use of thin slabs of masonry for filling in, as seen at *d*, of Fig. 1, which was an innovation said to have been made by the Lombards, not only caused vaulting to become lighter in construction, but made possible the wider application, by the later Romanesque builders, of the structural principle known as the concentration of

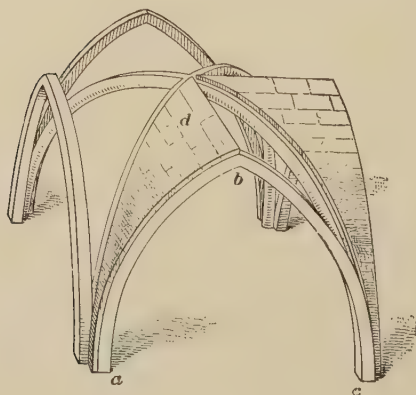


FIG. 1

stresses on isolated points of support. Further developments led to the fuller appreciation of the constructional value of the pointed arch and eventually a scientifically arranged framework of piers, arches, and buttresses was evolved, under which the walls and vaults of churches became merely filling-in pieces and ceased to exercise any real structural functions. This is clearly seen from

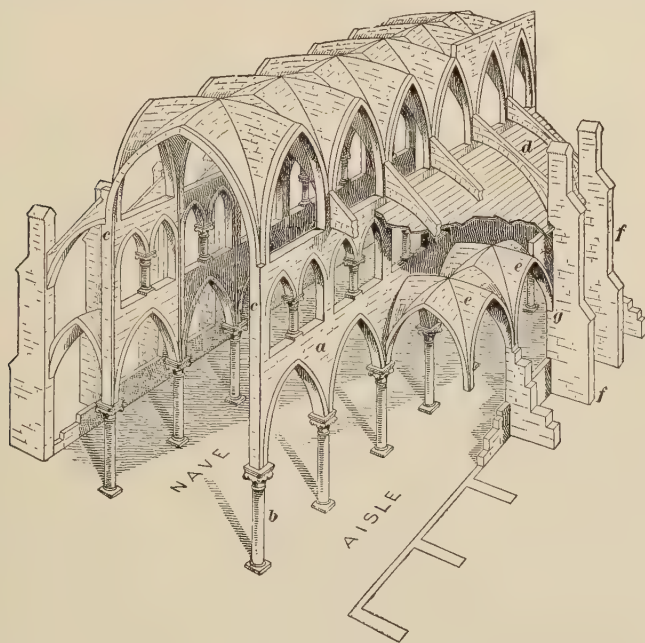


FIG. 2

Fig. 2, where the walls *a* of the nave are supported on the columns *b*. The groin ribs of the nave vaults rest on the piers *c*, which are directly over the columns *b*. The thrust of the nave vaults is carried by the flying buttresses *d* across the side vaults *c* to the solid buttresses *f*, the lower portion of which also receives the thrusts from the aisle vaults at *g*.

6. Principle of Equilibrium and Flying Buttresses.—Reference has already been made to another distinctive characteristic of Gothic construction known as equilibrium, or the principle of balanced thrusts. By the use in combination of these two

valuable systems of construction the thrust of a vaulted roof, where not met by a counter-thrust, was transmitted by flying or



FIG. 3

arched buttresses, as shown at *a* in Fig. 3, across the intervening portions of the structure to meet external wall buttresses *b* of great solidity, which were rendered stable by the superincumbent weight of heavy pinnacles or other masses of masonry, as at *c*.

7. Application of Principle of Balanced Thrusts.—By the application of the principle of balanced thrusts the nave of a church eventually consisted of a series of stone canopies, as seen in Fig. 2, each of which was supported at the angles by four slender piers, the resulting outward thrust being balanced by the inward thrust of flying buttresses abutting on rigid masses of

masonry constructed in the form of wall buttresses.

8. Introduction of Pointed Arches.—The pointed arch, which was first used by early Gothic church builders to overcome the

difficulty of vaulting an oblong bay, or compartment of a roof, was afterwards adopted for general use and soon dominated all parts of the building. The appreciation of the fact that a pointed arch exercises less lateral thrust than a semicircular one was largely instrumental in causing the former to supersede the latter. It was also found that not only could vaults and arcades be more freely designed with pointed arches than with round ones, but, in addition, they could also be more easily and more economically constructed.

9. Principal Features of Gothic Cathedrals.—The rapid development of the new style of architectural construction, in which a system of concentrated stresses and balanced thrusts superseded the method of ensuring the stability of a building by virtue of the weight of massive masonry, was followed by a period of remarkable architectural activity throughout all parts of Europe, and the result is seen in the immense number of cathedrals, large churches, and other buildings erected during the prevalence of the Gothic style. In its elements the plan of the mediaeval cathedral was the same in all countries. Built in the form of the Latin cross, the main axis of the building was placed east and west. The principal entrance was from the west, and the high altar stood at the east end of the structure. The two transepts forming the arms of the cross thus, respectively, faced north and south and the long stem of the cross, from its western extremity to the transepts, contained the nave and aisles. Lofty arcades separated the central nave from the adjoining aisles and the walling above the archways of the arcading was usually subdivided internally into two stories, the lower of which consisted of a series of small arches, called the *triforium*, while the upper one was pierced by the range of clerestory windows that lighted the nave.

10. Religious Orders and Monasteries.—Groups of monastic buildings, belonging to various orders of monks, were often appended to the cathedral or church. Of these orders the most famous and ancient followed the rule of St. Benedict and was established in Rome prior to the mission of Augustine in England, by Pope Gregory the Great. Another, known as the Cluniac

order, was founded by Odo, Abbot of Cluny, in 912. The Cistercian order was founded by the Abbot of Cîteaux, in Burgundy, in 1098 and introduced into England in 1128. Like most of the other orders of monks, the Carthusian was a reformed branch of the Benedictine. The founder of the Carthusians was St. Bruno, of Cologne, who established the order, in 1080, at the Grande Chartreuse in the diocese of Grenoble. There were other subordinate divisions of orders of monks and also various military orders, of which the principal were the Templars and the Hospitallers. The former were established in 1118 for the defence of the Temple at Jerusalem and for the protection of pilgrims journeying to it. The latter order was founded at the time of the Crusades to give hospitality and succour to sick and wounded Crusaders.

11. Another well-known religious order was that of the Friars. The essential difference between the monks and friars was that the former held nothing in separate proprietorship, but everything in common, while the latter were mendicants and held no property whatever, either individually or in common, but were dependent on charity. In course of time, however, benefactions to the friaries created considerable revenues. The principal orders and religious establishments of this body and the year in which each was founded are as follows : Dominican, or Black Friars, 1071 ; Franciscan, or Grey Friars, 1209 ; Carmelite, or White Friars, 1098 ; Austin Friars, or Friars Eremites, Crutched, or Crouched Friars, 1169 ; and Bethlehemite Friars, 1257.

12. Monastic building, which was founded early in the Romanesque period, did not attain its full success until the introduction of Gothic architecture. Indeed, much of the variety and beauty found in the carvings and ornamentation of the great cathedrals and churches is due to the highly developed technical knowledge and skill possessed by the inmates of the monasteries and other religious foundations. The arrangement of the church and adjoining monastery varied in accordance with the manners and customs of the order under which they were founded. Monastic buildings belonging to the Benedictines usually comprised a square cloister surrounded by groups of buildings, one

side of the cloistered court being bounded by the nave of a cruciform church, of which the transept formed part of the east end, as illustrated in the plan of Salisbury Cathedral, Fig. 96. Beyond, separated from the transept by a narrow passage, stood the chapter house, or place of assembly for the administrative body of the monastery. The refectory, or dining hall, was usually on the side of the cloister immediately opposite the church, and the dormitory, connected with the nave of the church by a staircase for night services, enclosed the western side of the court. Carthusian monasteries were planned on quite a different principle, as instead of using the choir of the church for the monks and the nave for the people, as was customary in Benedictine abbeys, the Carthusians constructed two small churches, one for the use of the monks and the other for the people, and this custom led to the institution of the parish church. In addition, members of the Carthusian order lived in separate cottages, or cells, arranged round a cloister.

13. Situated in an extensive tract of well-watered land and isolated by a moat and high boundary walls, the monastery became a little world devoted to the observance of its own religious rules and ritual and to the cultivation of letters, art, science, handicraft, and agriculture. Its entrance gateway led to the outer court round which were buildings for dispensing alms and medicine, a guest-house, and workshops for different trades and handicrafts. Other buildings, such as a mill and bakehouse, a granary, an infirmary, and stables, stood in the outer precincts of the monastery. Students of art and literature received tuition in these monastic foundations, which thus became centres of national education and general culture. Monasteries or conventual establishments were usually governed by an *abbot* or an *abbess*, although sometimes the superior bore the name of *prior*, in which case the monastic foundation was known as a *priory*. In English conventual cathedrals such as those at Ely and Canterbury the archbishop, or bishop, was the titular abbot, the superior of the monastery being known as the prior. Some priories were originally offshoots of large abbeys to which they were at first subordinate.

FRENCH GOTHIC ARCHITECTURE

NOTES ON FRANCE

HISTORICAL AND SOCIOLOGICAL

14. War on Feudalism.—An outline sketch of early mediaeval France has been given in *History of Architecture*, Part 2. The later history of that period shows how, during the thirteenth, fourteenth, and fifteenth centuries, the French monarchy gradually absorbed the great fiefs and finally triumphed over feudalism.

15. Formation of Communes.—Philip Augustus, ruling from 1180 to 1223, was the ablest French monarch since Charlemagne, and during his reign the countries of Vermandois, Amiens, Valois, L'Artois, Normandy, Anjou, Maine, and Touraine were added to the royal domain.

Royal charters, conferring special privileges, were granted to important cities and, acting under the authority thus bestowed, the citizens formed *communes*, or associations for mutual defence, elected magistrates, and organized militia. In return, when Philip invaded Flanders, troops supplied by the communes fought by his side and assisted in the victory gained by the French King at Bouvines, in 1214, over a combined army of Flemings, Germans, and English. This success, the first great national victory, added to the prestige of the crown and created a strong desire among the people for military glory.

16. Extension of the Royal Domain.—As a result of the crusade against the Albigenses, who lived in Languedoc and professed doctrines at variance with those of the Church of Rome, a considerable portion of the country lapsed to the crown, and with the acquisition of the Mediterranean coast the royal domain,

instead of being restricted to the district round Paris, now touched three seas. Louis IX, 1226 to 1270, firmly repressed the turbulent barons and established the Parliament of Paris, a court of justice to enforce equal laws throughout the realm. During this reign the power of the monarchy increased and France began to take a high rank among European nations.

17. Creation of an Assembly.—In order to repress the nobles, Philip IV, 1285 to 1314, encouraged the communes and elevated the *bourgeoisie*, or middle classes. It was in the reign of this monarch that the *States-General*, an assembly in which representatives of the three estates of the realm, namely, the nobles, the clergy, and the commons, took part, was first established in France.

18. Hundred Years' War.—During the short reigns of Philip's sons, who left no male heirs, their uncle Charles, Count of Valois, secured almost supreme power and his son obtained the crown and founded the Valois dynasty. This succession was disputed by Edward III of England, who claimed the throne as the descendant of the daughter of Philip IV, and led to the Hundred Years' War, 1328 to 1453. As the result of a protracted struggle between the two nations nothing remained to England, save the city of Calais, of her once vast French possessions, which included the patrimony of William I and the immense dower of Eleanor, wife of Henry II.

19. Overthrow of Feudalism.—The reign of Louis XI, 1461 to 1483, saw the overthrow of feudalism and the subjection of all classes to the crown. This monarch's policy of centralization restored France to her former position in Europe and the encouragement given to manufactures and education secured the internal prosperity of the country. In this reign Franche Comté, Artois, Provence, Roussillon, and other large districts were added to the kingdom. With the marriage of his successor, Charles VIII, to Anne, heiress of Brittany, the last of the great feudal states in France was absorbed by the crown. At the close of the Middle Ages, France, now united as a nation, was ready to enter on schemes of foreign conquest and to assert French influence in other countries.

ARCHITECTURAL PERIODS

PRINCIPAL FEATURES

20. Causes of Growth.—The extraordinarily rapid and prolific development of Gothic art in France was fostered by the adhesion of the bishops to the king in his perpetual struggles with the turbulent rulers of the provincial countries and also by the growth in power, wealth, and influence of the cities in which communes had been established for mutual defence against the feudal lords.

21. Transition Period.—Thus, in much the same manner that French Romanesque churches originated with the monasteries, so also the Gothic cathedrals of that country exemplified the strength, wealth, spirit of emulation, and relative importance of the great towns in which they were erected. New churches of imposing size sprang up in all directions throughout the royal domain and in the adjoining provinces. The transition from Romanesque to Gothic can be traced in the abbey church of St. Denis, which was consecrated in the year 1140, but Laon Cathedral was the earliest perfect Gothic church of importance. Notre Dame, at Paris, and Chartres Cathedral date from the twelfth and the great churches of Rheims and Amiens from the thirteenth century.

22. Classification of Periods.—French Gothic architecture is usually divided into the following three periods, which, as in England, are distinguished from one another by certain peculiarities of plan, design, or construction.

(1) *Early Pointed period*, from 1150 to 1275.

(2) *Middle Pointed*, or *Rayonnant*, *period*, from 1275 to 1375, a term derived from the characteristic wheel tracery of the rose or circular windows.

(3) *Late Pointed*, or *Flamboyant*, *period*, from 1375 to 1525, so called on account of the fantastic and unrestrained nature of the style.

23. Early Pointed Period.—In the Early Pointed period the arches were less acutely pointed and the windows shorter in

proportion to their width than those of the corresponding period in England, known as the Lancet period. The lofty and well

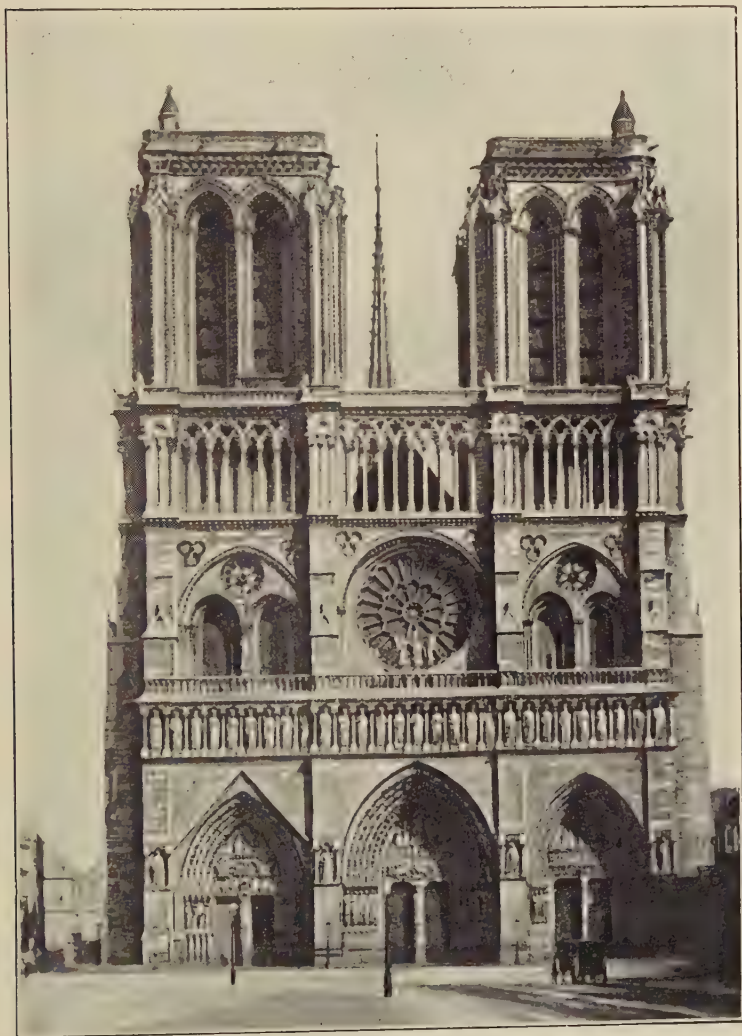


FIG. 4. NOTRE DAME, PARIS

proportioned churches of France were characterized by a general air of simplicity combined with great vigour of design. Large

round pillars were often used for the nave arcading in preference to groups of small clustered shafts. Narrow windows or arcaded openings were coupled, or grouped in triplets, under a large pointed arch, and *plate-tracery*, consisting of circular foiled openings, pierced through the stone window heads, was used throughout.

24. Middle Pointed Period.—Buildings of the French Middle Pointed period bore a closer general resemblance to contemporary Gothic work in England. The vaulting was more varied and decorative in character than in the Early Pointed period. Piers and columns of slender proportions were used for the nave arcading, and the churches became loftier and their decoration more profuse. Large windows filled with *bar-tracery*, that is, ornamental stonework resembling bars of iron twisted into the geometrical or flowing forms required, and filled with stained glass, were prevalent.

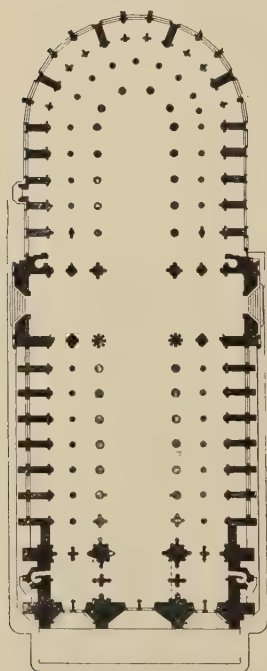


FIG. 5.
PLAN OF NOTRE DAME, PARIS

25. Late Pointed Period.—The Late Pointed period of French Gothic art was characterized by richly decorated vaults and by the flamboyant, or flame-like, shape of the window tracery. Realistic carvings and sculpture and general richness of design, often accompanied by over-elaboration of detail, were commonly found in all parts of the buildings of this period.

EXAMPLES

26. Notre Dame at Paris.—The cathedral of Notre Dame, Fig. 4, was founded in 1163 on the site of a former church. Although consecrated 19 years after the foundation of the



FIG. 6. INTERIOR OF NOTRE DAME, PARIS

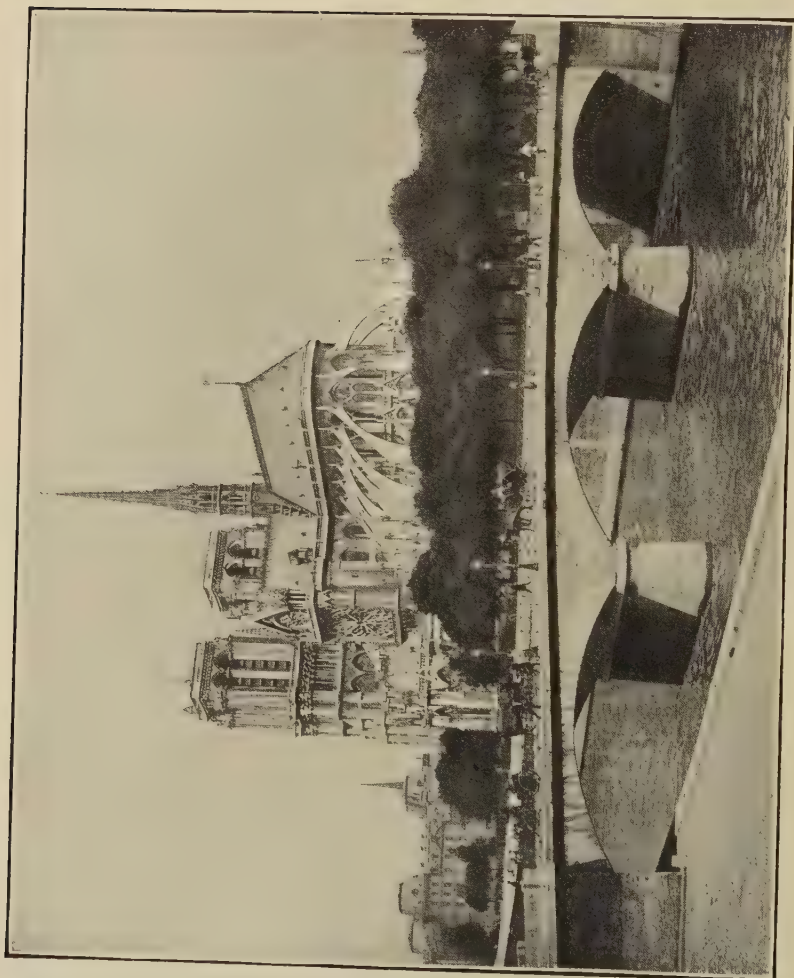


FIG. 7. NOTRE DAME, PARIS

church, yet the nave was not completed until early in the thirteenth century. While still preserving its ancient form, the structure has been much altered in detail since it was first erected. Its plan, shown in Fig. 5, consists of a nave and double aisles crossed by slightly projecting transepts beyond which the aisles continue round the semicircular choir. Side chapels, as shown in the transverse section, Fig. 8, are constructed between the flying buttresses that support the vaulting

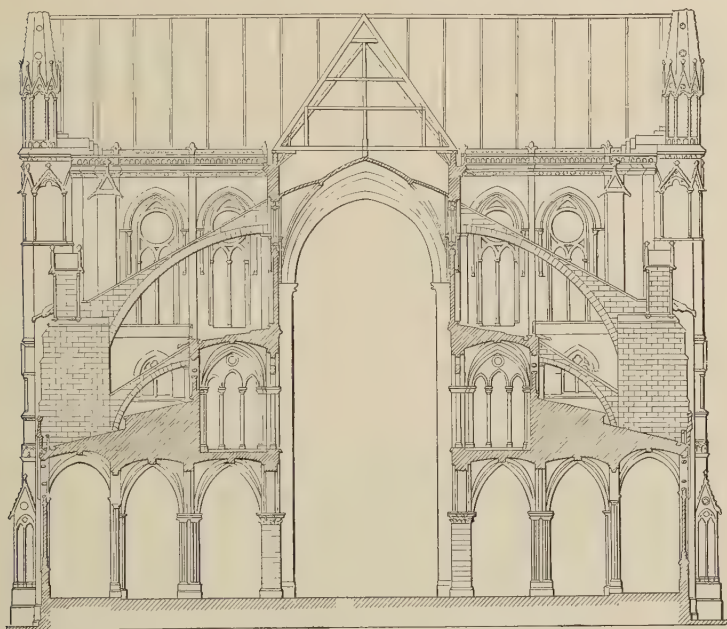
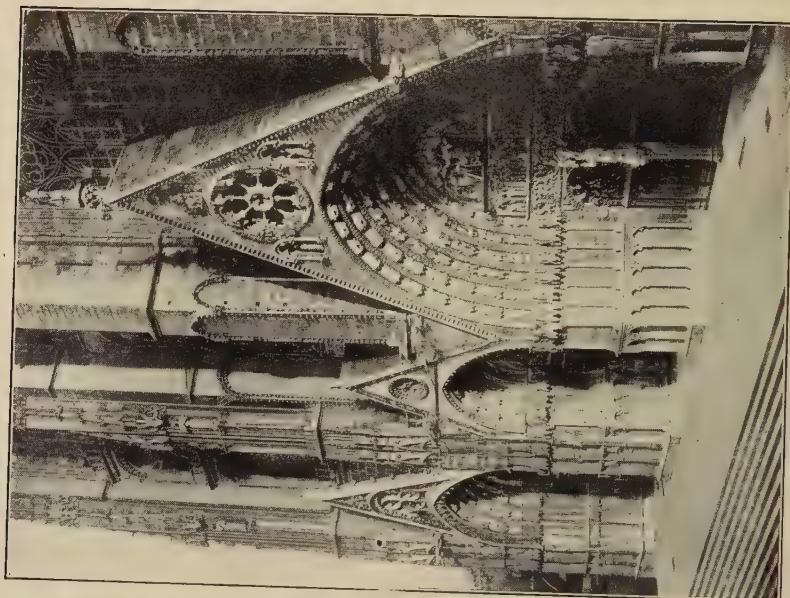


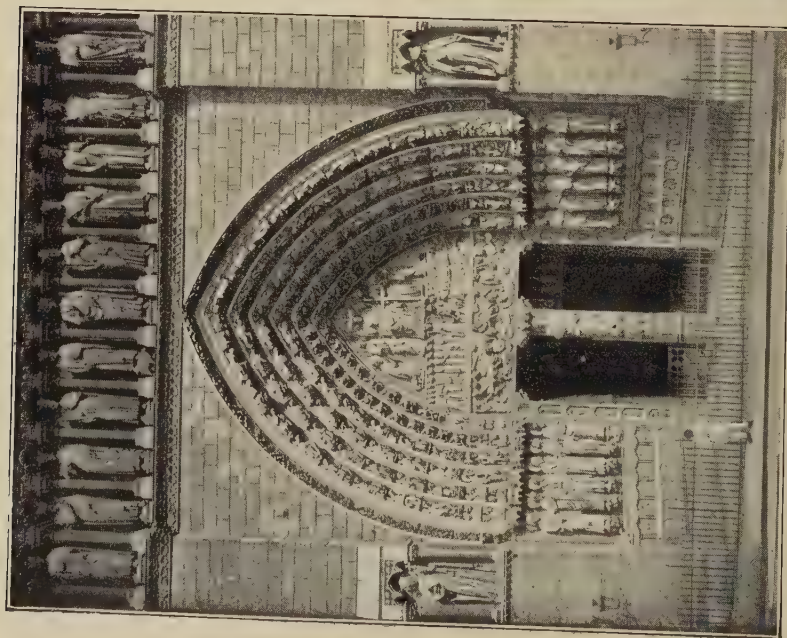
FIG. 8. TRANSVERSE SECTION OF NOTRE DAME, PARIS

of the nave and choir. There is a triforium over the circular pillars of the nave arcade above which the nave walls are pierced by the large clerestory windows, seen in the interior view, Fig. 6.

27. The beautiful west front of the cathedral, illustrated in Fig. 4, dates from the beginning of the thirteenth century. It is divided by lofty buttresses into three vertical sections and by strongly accentuated horizontal lines into a similar number of stages or stories. Three large deeply recessed portals, of which



(b) PORTALS OF BOURGES CATHEDRAL



(a) PORTAL OF NOTRE DAME, PARIS

FIG. 9



FIG. 10. INTERIOR OF BOURGES CATHEDRAL

a view of the central one is shown in Fig. 9 (*a*), form the lowest stage of the composition. The next stage is occupied by a large rose window 42 feet in diameter, filled in with simple tracery and flanked by double-pointed windows. A deep gallery, composed of pairs of pointed, arched openings supported by slender shafts, forms the third stage of the front. The façade is terminated

by two uncompleted square towers each of which is pierced by double-pointed windows about 54 feet in height. The graceful lead-covered spire placed above the crossing in 1859, and the picturesque range of flying buttresses surrounding the eastern end of the building, unite in causing this beautifully designed church to present an extremely attractive appearance, more particularly as seen from the river, Fig. 7.

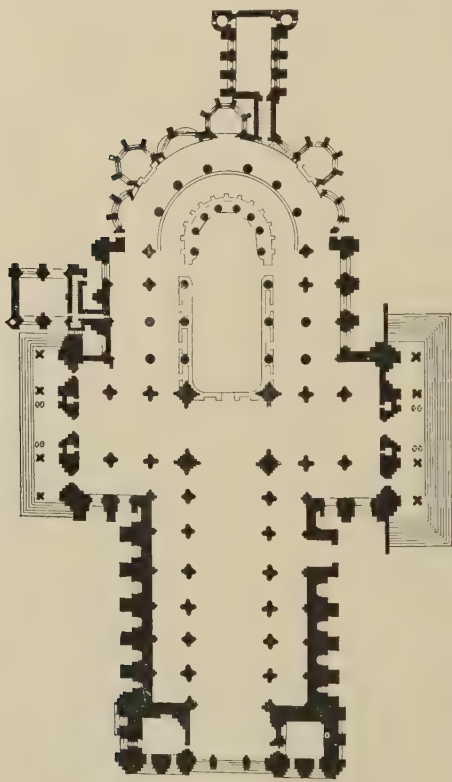


FIG. 11. PLAN OF CHARTRES CATHEDRAL

28. Bourges Cathedral.—Although without transepts, the plan of Bourges Cathedral, which comprises a broad nave and double

aisles continued round the semicircular choir, bears a close resemblance to that of Notre Dame at Paris, which it somewhat exceeds in size. Commenced in 1190, the area covered by this large cathedral is slightly over 73,000 square feet. Both the nave and the inner aisles have triforium stories and clerestory windows. Owing to its vast height and fine detail, the internal

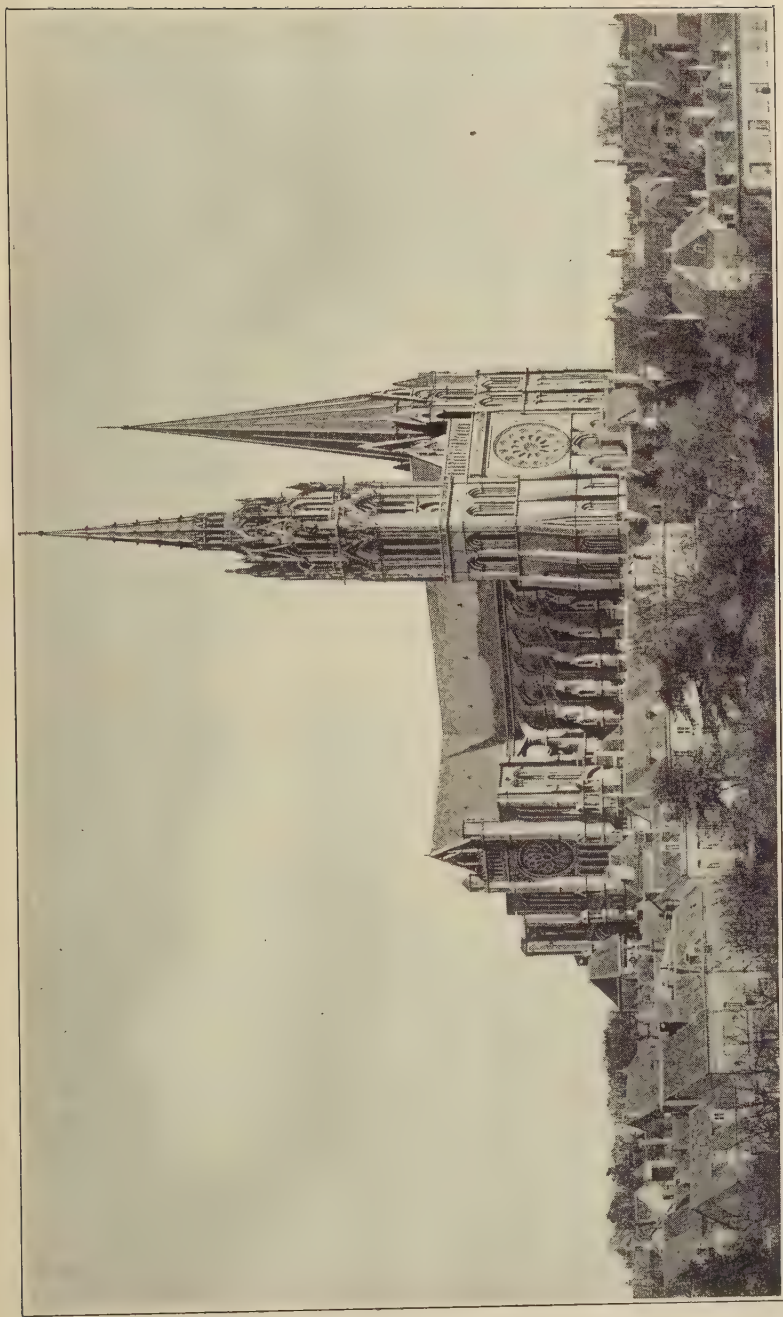
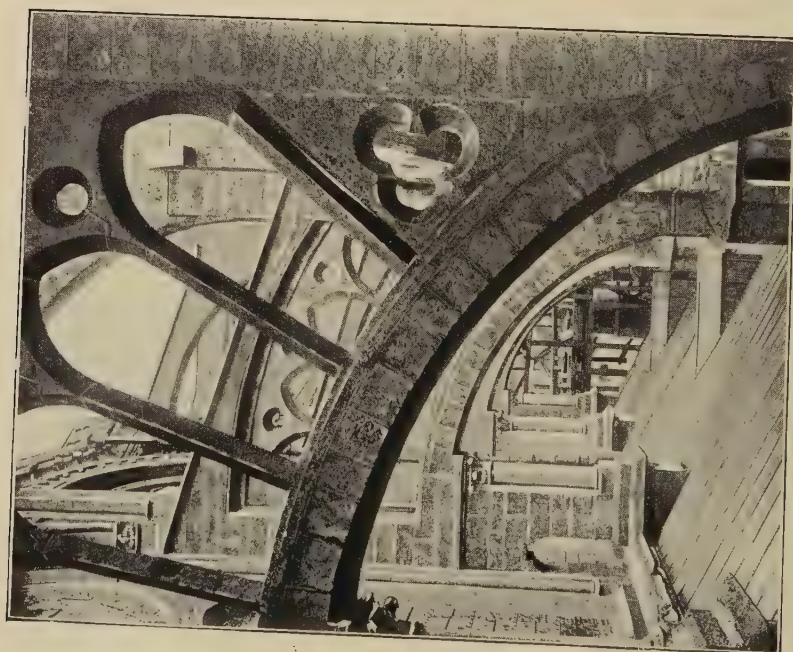
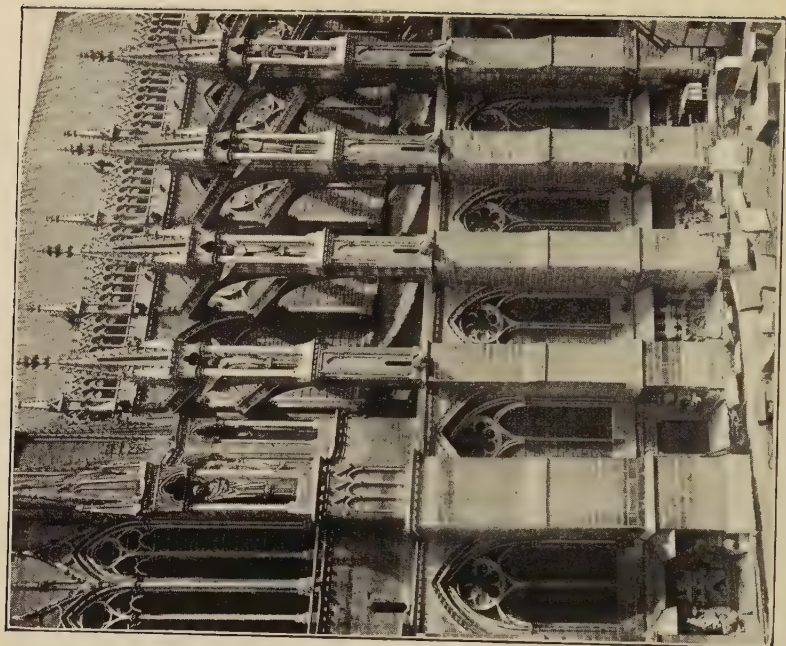


FIG. 12. CHARTRES CATHEDRAL



(a) FLYING BUTTRESSES ARRANGED IN TIERS



(b) FLANK OF NAVE, RHEIMS CATHEDRAL

FIG. 13

aspect of the nave, Fig. 10, is stately and impressive. A steep ascent leads to the western façade, which has square flanking towers of unequal height and five portals, three of which are illustrated in Fig. 9 (b). All these portals are profusely adorned with sculpture.

29. Chartres Cathedral.—On referring to the plan of Chartres Cathedral, Fig. 11, it will be seen that it consists of a nave and aisles, well-emphasized north and south transepts, a semicircular-shaped choir, double ambulatories, and radial chapels. The western façade, shown in the general view, Fig. 12, dates from 1170. It is adorned with three fine portals, all of which are enriched by numerous well-executed statues. Above is a large central rose window and beyond the *Galerie Royale*, with its statues of the royal benefactors of the church. Two towers and lofty spires which flank the façade differ in form, style, and detail, and their heights are unequal. That at the southern end of the front, known as the *Clocher-vieux*, dates from 1145 and is an admirable example of an early Gothic spire. The northern spire, called the *Clocher-neuf*, completed in 1514, is of the Flamboyant period. It is remarkable for its well-grouped pinnacles and gables. The nave vaulting is supported by flying buttresses arranged in three tiers, of which the two lower ones are connected with each other by small radiating columns and arches in the manner shown in Fig. 13 (a).

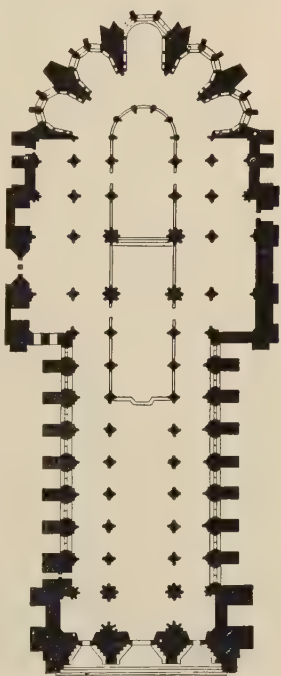


FIG. 14.
PLAN OF RHEIMS CATHEDRAL

30. Rheims Cathedral.—The cathedral at Rheims, erected during the years 1212 to 1240, is one of the finest examples of thirteenth-century French Gothic art. Its plan, shown in Fig. 14, bears a close resemblance to that of Amiens Cathedral, which it

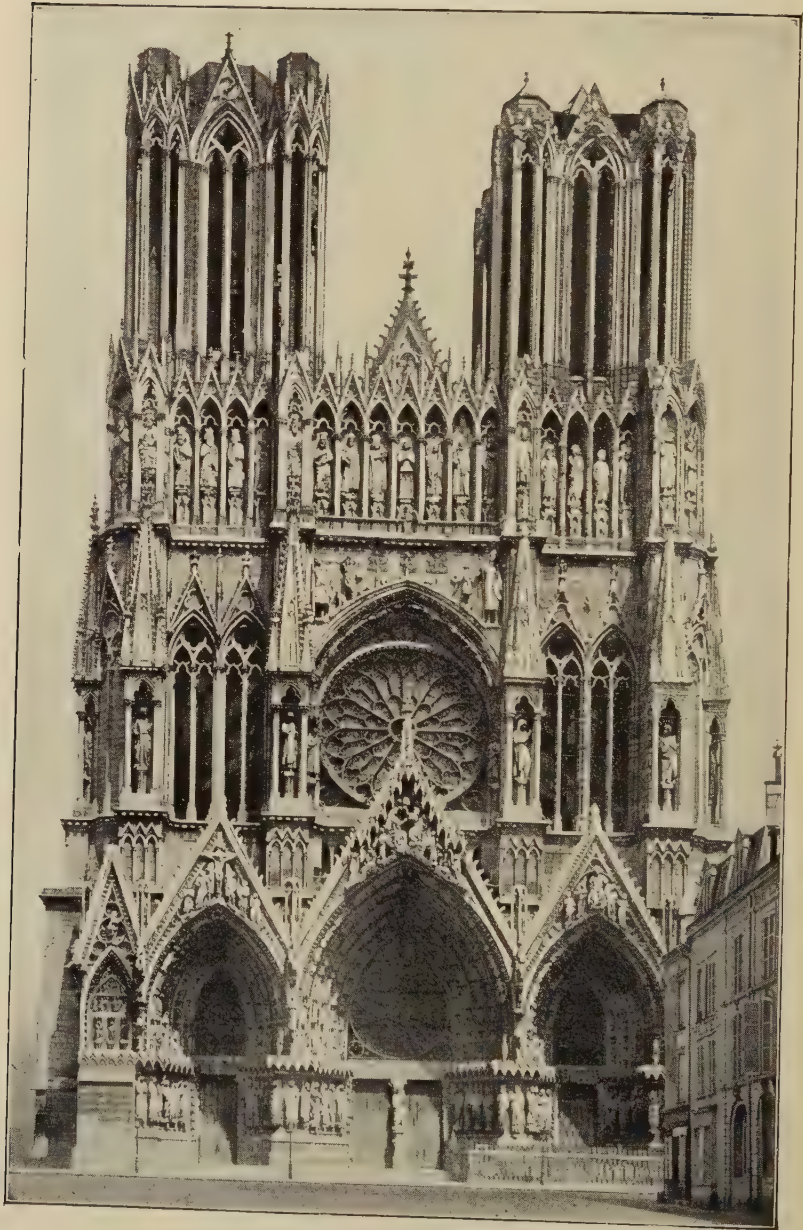


FIG. 15. RHEIMS CATHEDRAL

antedates by 8 years. Architecturally the structure contains the usual characteristics of the ecclesiastical art of the period to which it belongs. These characteristics are fully expressed in the cathedral at Rheims by the single ambulatory and radiating chevet-chapels of the east end; also by the deeply recessed portals of the western façade, the large rose window, and the upper gallery, filled with canopied niches for sculpture as seen in Fig. 15. Externally, the principal elements of design in the lateral walls of the nave illustrated in Fig. 13 (*b*) comprise the flying arches and pinnacled buttresses that receive the thrust of the lofty vaulted ceiling, the pierced and richly decorated parapet, and the high-pitched roof.

31. Amiens Cathedral.—The cathedral of Amiens, a plan of which is shown in Fig. 16, consists of a nave and aisles flanked by side chapels, and north and south transepts. The aisles, continued round the choir, and the radiating chapels of the apse form the arrangement known as the *chevet*. A peculiarity of this fine church is the extreme height of the nave vaulting, which is 147 feet from the floor level. The main portion of the building was erected between the years 1220 and 1288, but the west portal was not completed until toward the close of the fourteenth century. The slender timber *flèche*, or turret, placed over the crossing rises 145 feet above the roof level. A view of the interior of Amiens cathedral, looking west, is shown in Fig. 18. The architectural treatment of the west front, illustrated in Fig. 17, bears a close general resemblance to that of the western

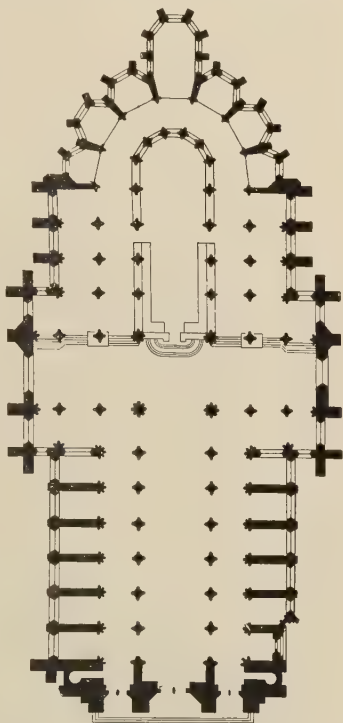


FIG. 16. PLAN OF AMIENS CATHEDRAL

façades of the cathedrals at Rheims, Fig. 15, and at Paris, Fig. 4.

32. The Sainte Chapelle, Paris.—The beautiful building known as the Sainte Chapelle, at Paris, was originally a palace chapel.



FIG. 17. AMIENS CATHEDRAL

It has been somewhat altered during successive restorations since it was first erected between the years 1245 to 1248 to receive the sacred relics brought back from the Crusades by Louis IX.

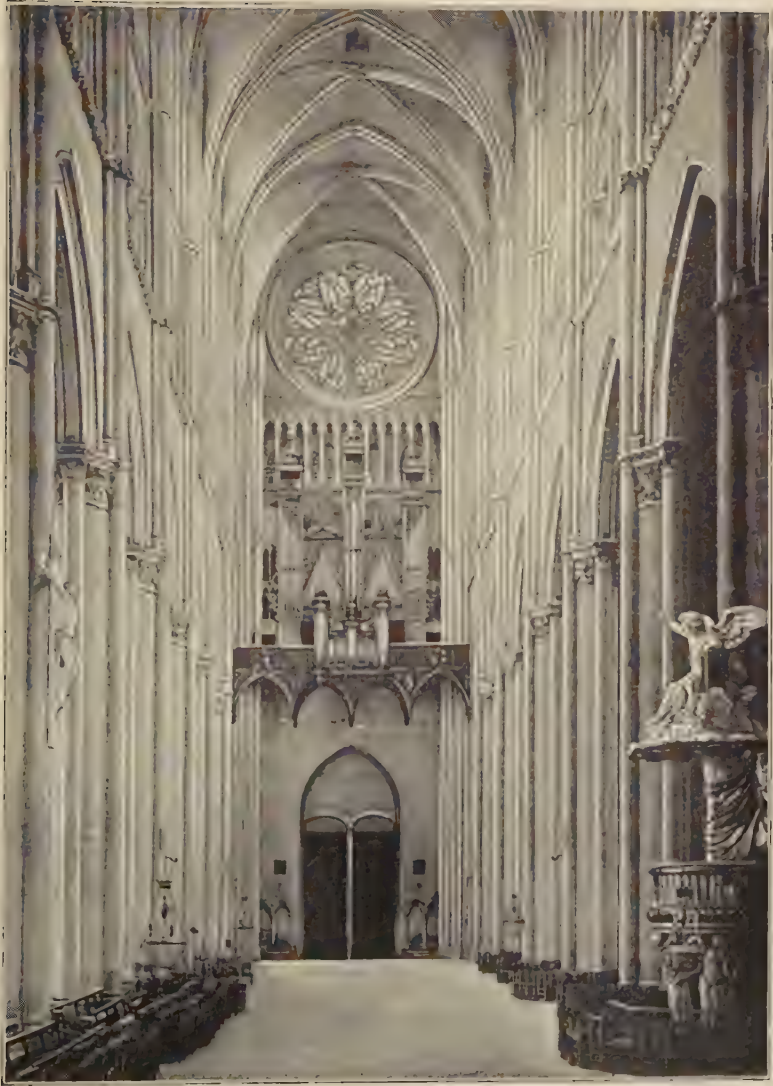


FIG. 18. INTERIOR OF AMIENS CATHEDRAL

Internally, the structure, as shown in plan in Fig. 19 and in elevation and transverse section at (a) and (b), Fig. 20, comprises a large crypt or lower chapel once used by the servants of the palace and a finely proportioned upper chapel, 115 feet in length,

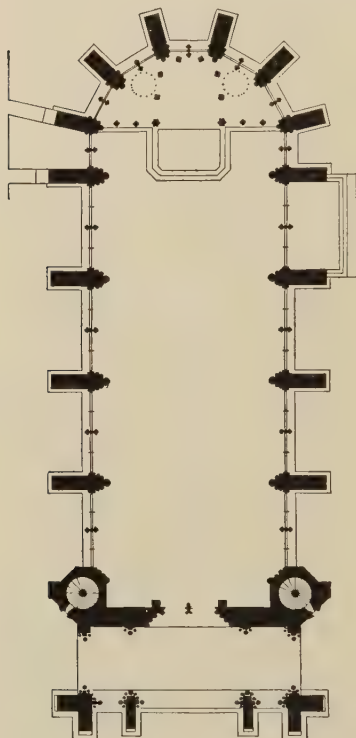


FIG. 19. PLAN OF SAINTE CHAPELLE, PARIS

36 feet in width, and 66 feet in height, designed for the use of the King and his court. Externally, the upper part of the west façade, Fig. 20 (a), terminates in a richly crocketed gable of lofty proportions placed between octagonal turrets and surmounting a large fifteenth-century circular window of elaborate design, shown in detail in Fig. 32 (c).

33. Abbey Church of St. Ouen.—The church of St. Ouen, at Rouen, is a fine example of the middle and late periods of Gothic art in which the transition between the two styles is clearly defined. As originally planned, its two western towers were intended to be placed diagonally on the façade, as shown on the plan,

Fig. 21, but in the front, as constructed, see Fig. 23, they were built in the usual manner, namely, with their walls parallel with those of the main structure. Commenced in 1318, but not completed until 1515, much of the window tracery is geometrical in form, yet there are also some fine examples of the later Flamboyant period. The tower over the crossing, shown in Fig. 22, is 268 feet in height. It is surmounted by an octagonal openwork lantern of late Gothic design, the detail of which is of a very ornate character.

34. St. Maclou, Rouen.—The wonderful elaboration of detail typical of the Flamboyant period is well illustrated in the portals of the church of St. Maclou at Rouen. In this example the lace-like minuteness of the open stonework and the absence of

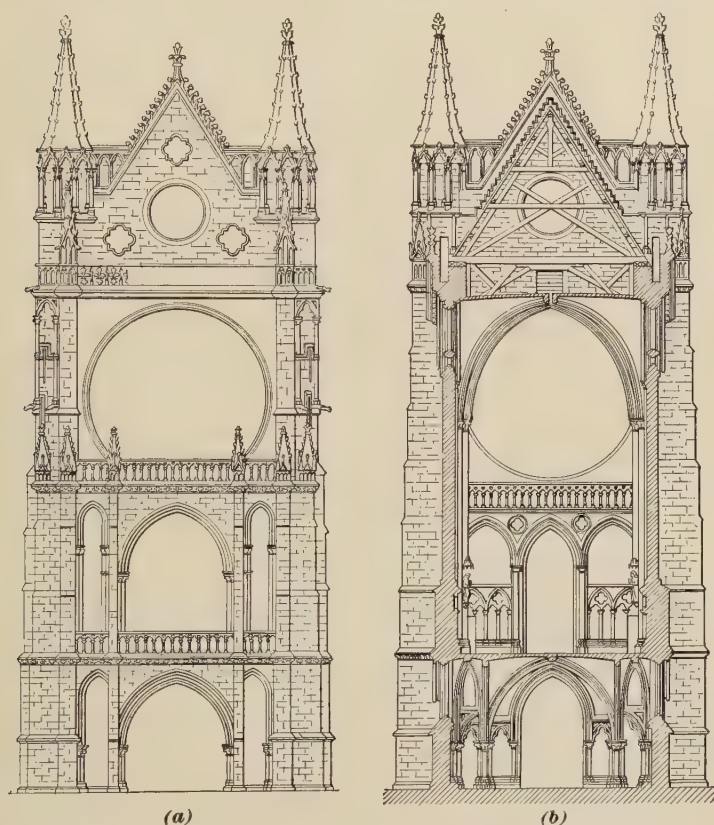


FIG. 20. ELEVATION AND TRANSVERSE SECTION OF SAINTE CHAPELLE, PARIS

plain wall surfaces are alike remarkable. This fine example of fifteenth-century French Gothic is illustrated in Fig. 24.

35. Mont St. Michel.—The abbey church of Mont St. Michel, Normandy, occupies the summit of a steep isolated rock. Round it are clustered some remarkable eleventh-century monastic

buildings interspersed with those of a later period, chiefly thirteenth century, of pointed architecture, as shown in Fig. 25. The twelfth-century nave of the church and the late Flamboyant choir, dating from 1523, are illustrated in Fig. 26, while the fortified thirteenth-century gateway that forms the entrance to the monastery is shown in Fig. 27. Other interesting parts of the building are seen in Figs. 28 and 29, the former illustrating the hall and chapter house of the Knights of St. Michel, an order founded by Louis XI in 1469, and the latter the cloisters, which were completed in 1228.

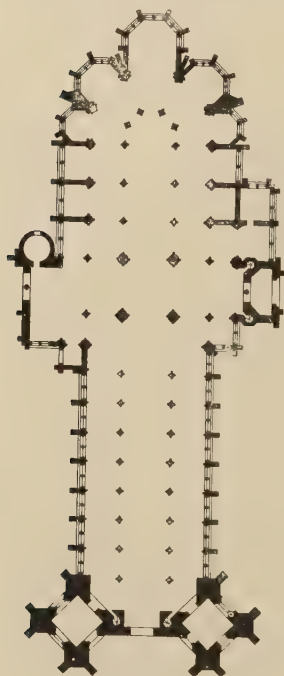


FIG. 21.
PLAN OF ABBEY CHURCH OF
ST. OUEN, ROUEN

secular Gothic architecture is notable as forming the ancient meeting place of the *parlement*, or supreme tribunal, of Normandy.

36. Palais de Justice, Rouen.

Although its architectural proportions are entirely different, yet the detail and ornamentation of the Palais de Justice, at Rouen, illustrated in Fig. 30, bear a striking resemblance to several of the numerous town halls that exemplify Belgian Gothic art at its best. Dating from the fifteenth century, and consisting of a central and two wing buildings approached from a spacious courtyard, this fine example of French

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

37. Plans.—French cathedrals are usually broad in proportion to their length; double aisles are common and side chapels are often placed between the flying buttresses of the nave and choir.

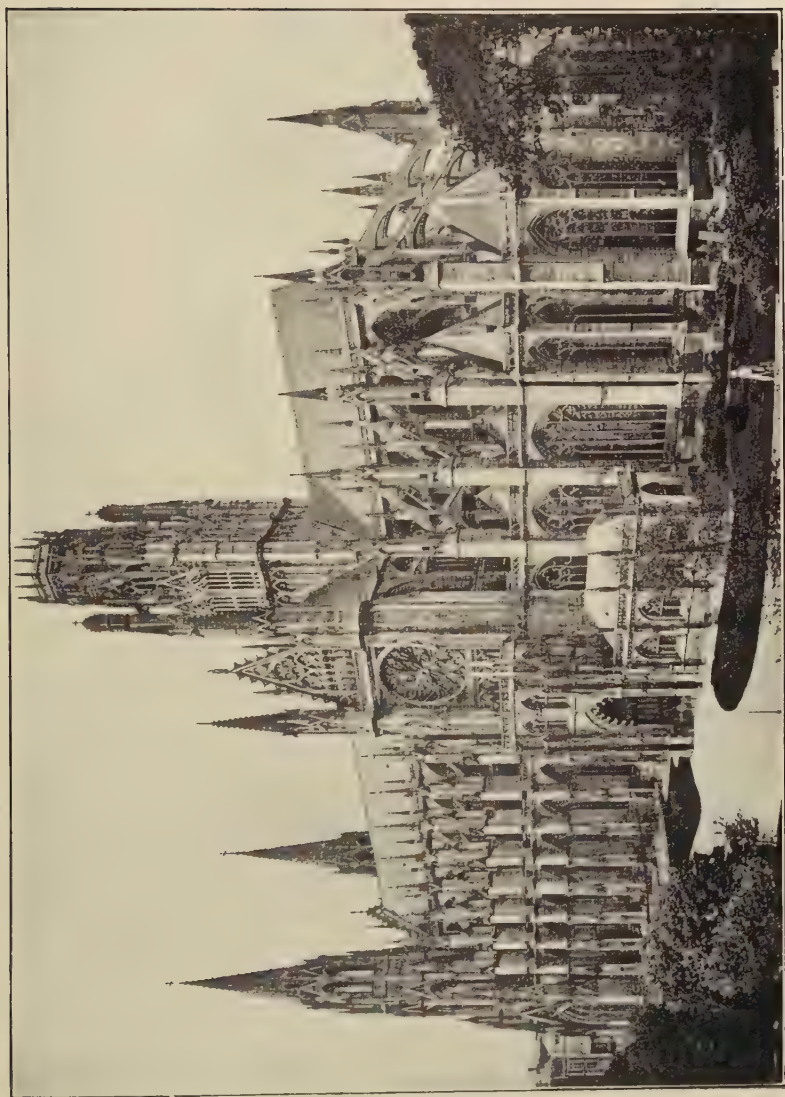


FIG. 22. ABBEY CHURCH OF ST. OUVEN, ROUEN



FIG. 23. ABBEY CHURCH OF ST. OUEN, ROUEN

Transepts seldom project far beyond the face of the aisle walling, and sometimes, as in the cathedral at Bourges, they are non



FIG. 24. ST. MACLOU, ROUEN

existent. The east end usually terminates in an apse and the aisles and side chapels generally continue round the choir, the

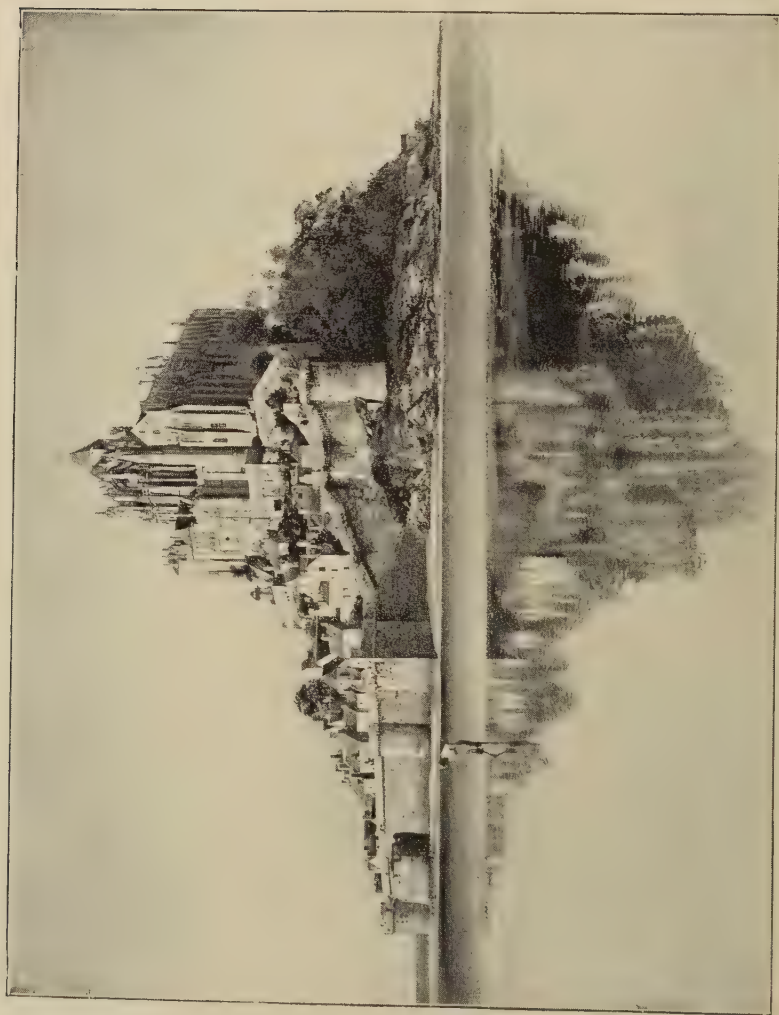


FIG. 25. ABBEY CHURCH OF MONT ST. MICHEL, NORMANDY



FIG 26. CHOIR OF MONT ST. MICHEL, NORMANDY

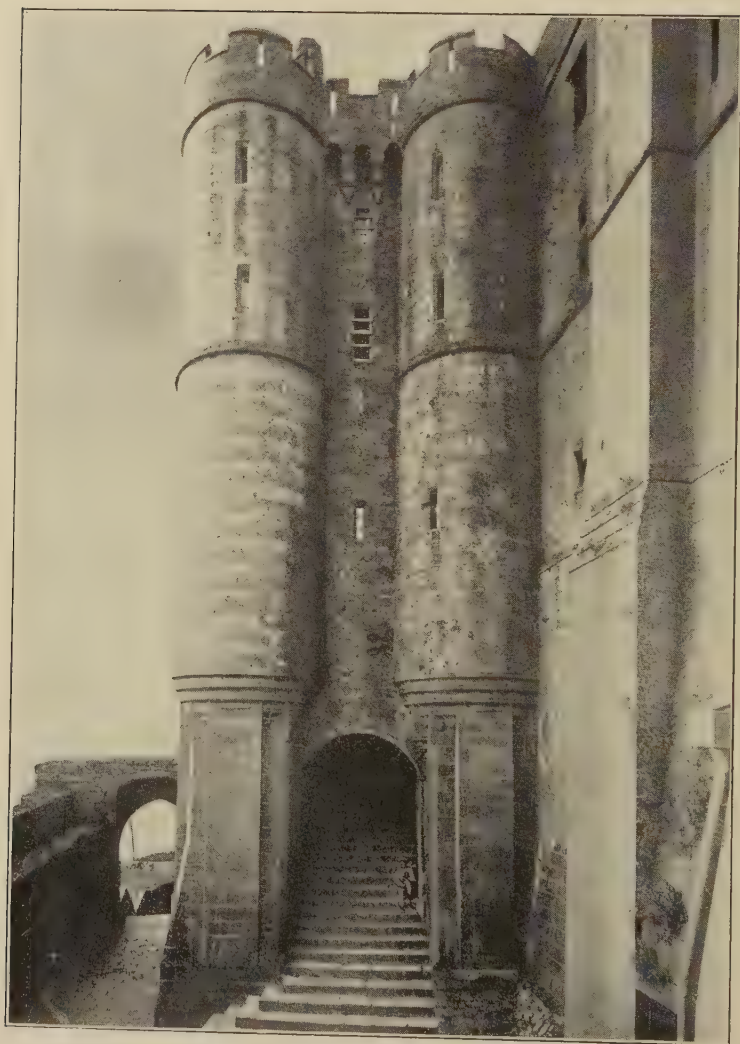


FIG. 27. GATEWAY OF MONT ST. MICHEL, NORMANDY



FIG. 28. CHAPTER HOUSE OF MONT ST. MICHEL, NORMANDY



FIG. 29. CLOISTERS OF MONT ST. MICHEL, NORMANDY

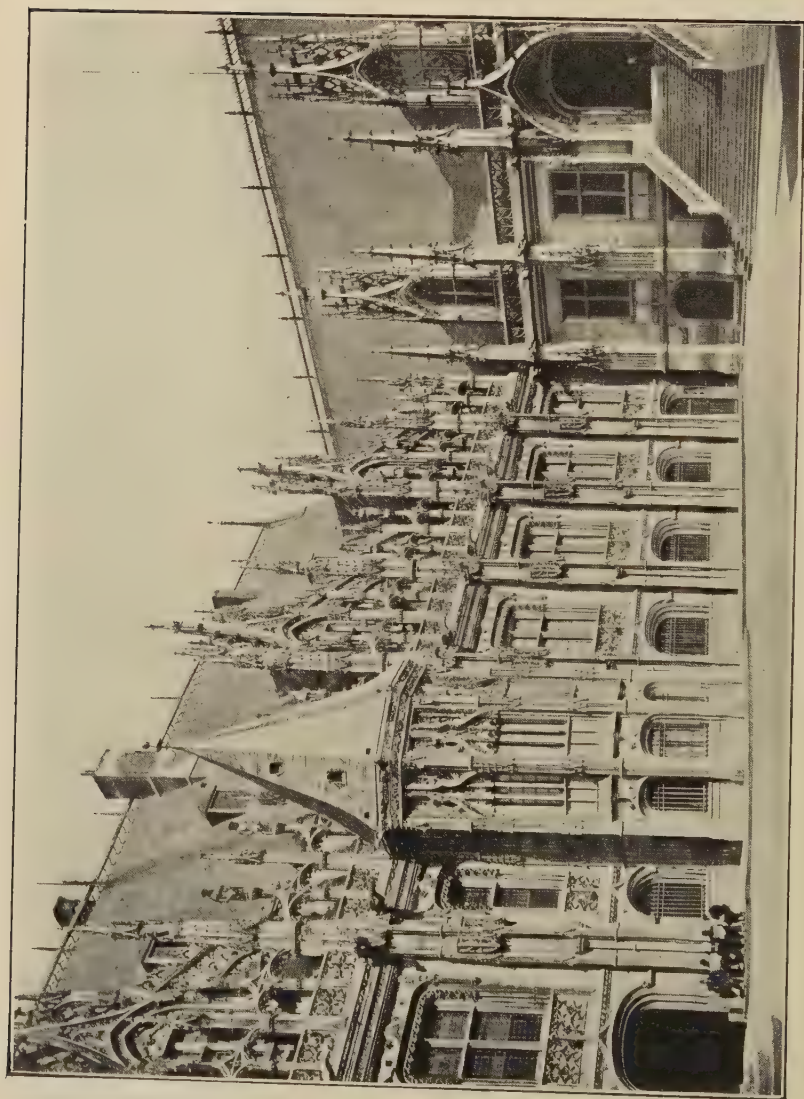


FIG. 30. PALAIS DE JUSTICE, ROUEN

combination of aisle or ambulatory, apse, and chapels thus forming the chevet. Central towers are rare, but the flanking western

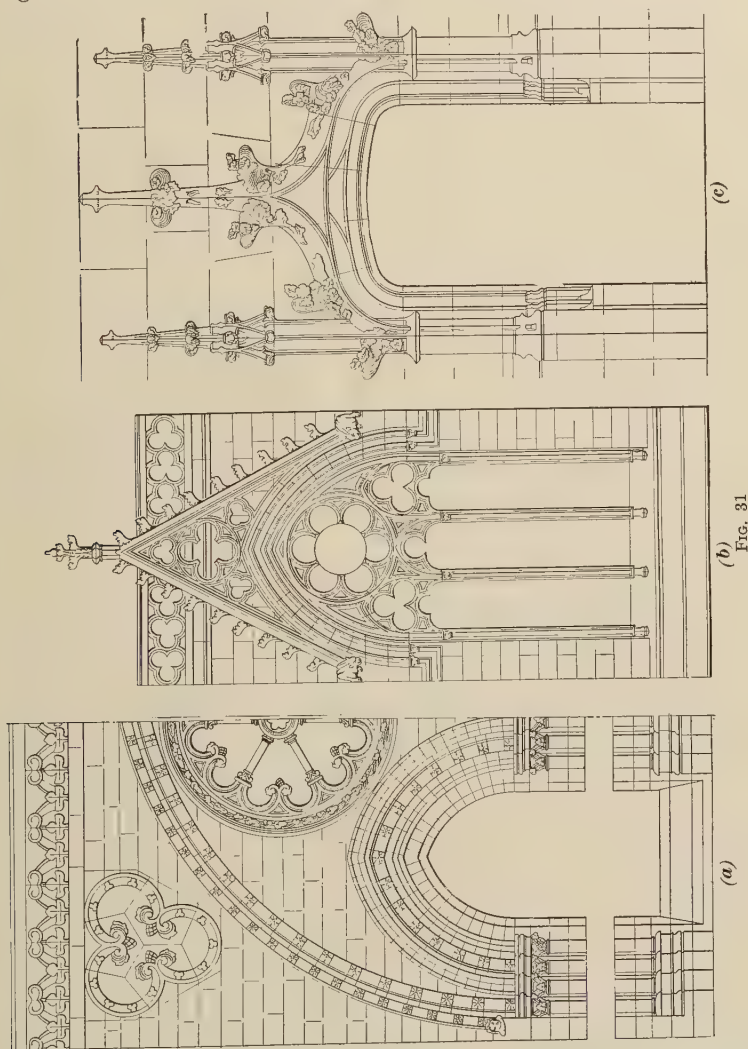


FIG. 31

towers are common features of French Gothic art. Projecting porches are almost unknown, the principal entrances as a rule being arranged in deeply recessed portals.

38. Walls.—The walls, usually constructed of stone, are often fine examples of masonry, but the massive flying and wall buttresses form the real supports of the structures to which they are attached.

39. Roofs.—Open timber roofs are rare in France, as the Gothic cathedral builders preferred to conceal the steep-pitched roofs with stone ceilings or vaults. French vaulting, although sufficiently varied and decorative in design, was never ornamented to the extent apparent in the last phase of English vaulting.

40. Openings.—The elaboration of design and general prominence that marked the doorways of French Gothic buildings

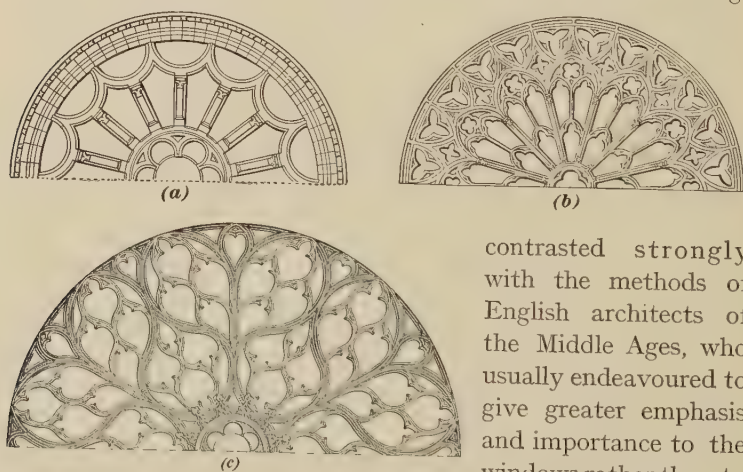


FIG. 32

contrasted strongly with the methods of English architects of the Middle Ages, who usually endeavoured to give greater emphasis and importance to the windows rather than to the doors of their

buildings. Among the finest examples of French portals, those at Notre Dame, Rheims, Chartres, and Amiens are conspicuous for lavish enrichments of sculpture and carving.

Some characteristic treatments of door and window openings are shown in Fig. 31, in which the external elevation of a window of the Early Pointed period, from the choir of Notre Dame, Paris, is illustrated at (a). Another window from the same building, but belonging to the Middle period, is shown at (b), and a typical small doorway of the Late, or Flamboyant, period at (c). Examples of the circular windows used in each period

of French Gothic art are illustrated at (a), (b), and (c), Fig. 32. The evolution of the tracery of these windows, from the simple geometrical form, as seen in the example of the First period (a), through the more decorative treatment of the Middle period, as exemplified at (b), until it reached its culminating point in the flowing lines and leaf-like forms of the example, from Sainte Chapelle, Paris, at (c), which illustrates the Late period, is very instructive.

41. Mouldings.—A series of hollow and convex mouldings, profusely carved with representations of saints, martyrs, and angels, adorned the deep jambs and soffits of the doors, windows, and archways of important buildings. But the mouldings themselves usually consisted of a few members the simple outlines of which bore a close general resemblance to those of the parallel period of English Gothic architecture.

42. Columns.—As structural supports columns were preferred to piers, circular shafts of large diameter being frequently used for the main arcades between the nave and aisles. Small columns were sometimes attached to the main shaft and carried up to the springing of the nave vault, as illustrated in Fig. 10.

43. Ornamentation.—The adaptation of natural forms to architectural decoration was a marked feature of French mediaeval art. Plants and flowers, either directly imitated or skilfully conventionalized, formed the models for the masses of ornamentation that in the later period of French Gothic were all too profusely applied. Finally, French floral and plant enrichment degenerated into the slavish reproduction of natural forms. Extraordinary representations of monstrous and grotesque beasts and goblins were freely used at all three periods.

The gargoyles, through which the rain-water was discharged from the roofs, usually took the form of hideous monsters or symbolic beasts. Examples of these grotesque figures, from the towers of Notre Dame at Paris, are shown in Fig. 33 (a) to (d).

44. Fig. 34 (a), (b), and (c) illustrates three typical French capitals belonging respectively to the Early, Middle, and Late

Pointed periods. The tall, slender foliated capital of the first period, with its square or octagonal abacus and conventional

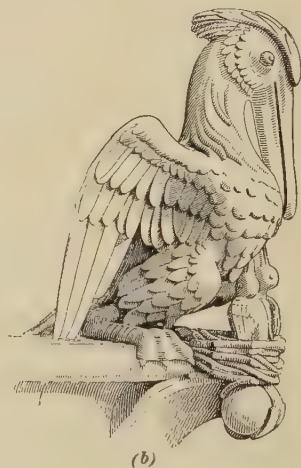
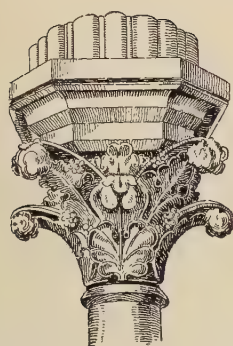
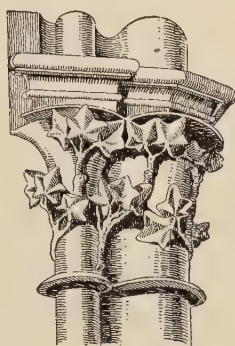


FIG. 33

foliage, as shown at (a), gave place, at the close of the thirteenth century, to the more realistic carving of the second period,



(a)



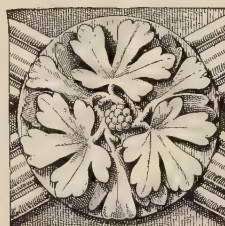
(b)



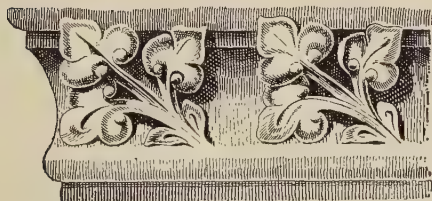
(c)



(d)



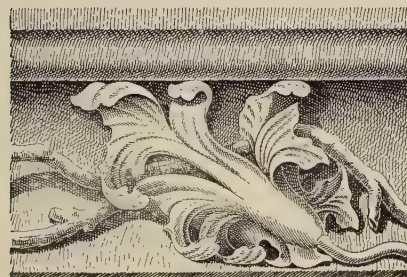
(e)



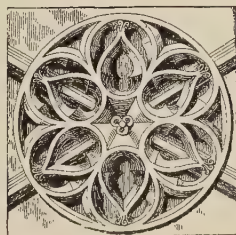
(f)



(g)

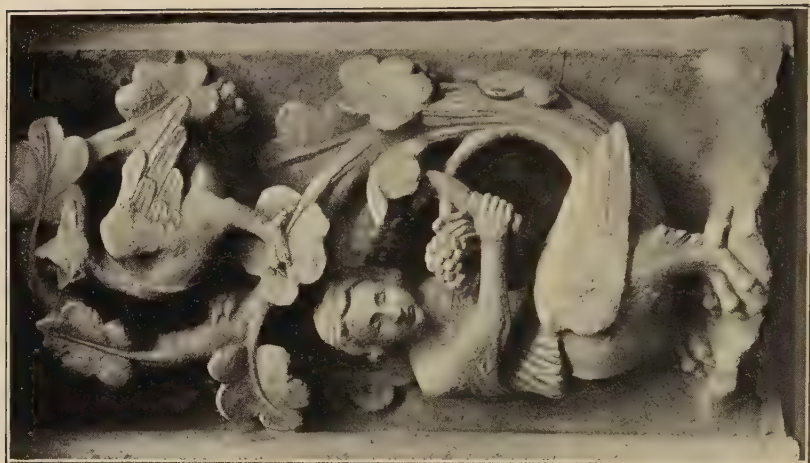


(h)

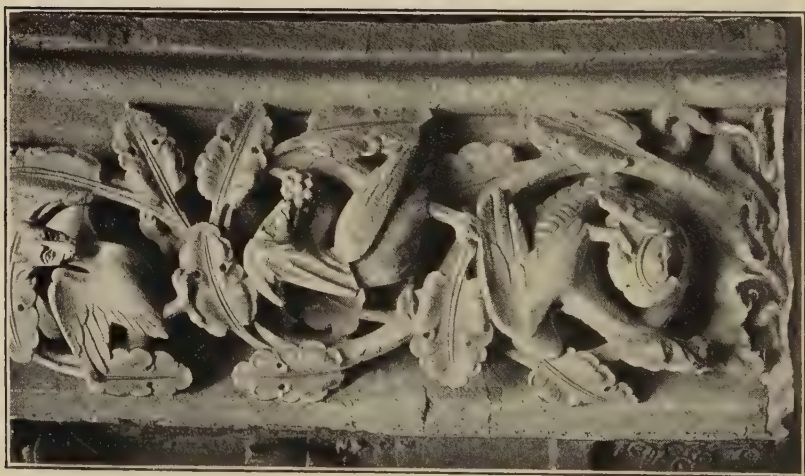


(i)

FIG. 34



(b)



(a)

FIG. 35

illustrated at (b). But in its turn the latter degenerated into the non-structural ornamentation displayed in the irrational form and minute carving that characterized the decoration of the third period of French Gothic art, of which an example is given at (c).



FIG. 36. STAIRCASE ROUEN CATHEDRAL

Similarly, these essential peculiarities of each period can be traced in the running ornamentation, of which examples are shown in Fig. 34 (d), (e), and (f). Three typical examples of the carved bosses used in each period to cover the intersections of vault ribs are illustrated at (g), (h), and (i).

45. Some interesting illustrations of early foliage decoration combined with grotesque forms are seen in Fig. 35 (*a*) and (*b*). These examples of running ornamentation are from the arch moulds of the west doorways of Notre Dame.

Decorative work of a later period is well illustrated in Fig. 36, which shows a beautiful open staircase from the north transept of the cathedral at Rouen. The geometrical setting out of the light open tracery of the balustrades is very cleverly arranged, and the staircase is a fine example of scientific construction allied to highly skilled workmanship.

GERMAN GOTHIC ARCHITECTURE

NOTES ON GERMANY

HISTORICAL AND SOCIOLOGICAL

46. **Hohenstaufen Dynasty.**—During the Hohenstaufen dynasty the independence of the German princes reached its height. The kings, vainly attempting to become predominant in Italy, neglected their German interests and, consequently, the power of the princes increased. Each noble now claimed the right to wage war, and in the district round his castle became a law to himself. Robber-nobles, emerging from their mountain lairs, attacked and robbed peaceful travellers and defied the feeble power of the law.

47. The peasants were still feudal tenants and there was no one to hear their complaints or to redress their grievances. Encroaching more and more on their ancient privileges, the nobles deprived the peasants of their common rights over the pastures, and nothing but the rapid growth of the cities proved an effectual check on the rapacity of the feudal lords. Fortified and provisioned for a siege, each city became a small free state, in which the old German love of liberty still flourished, and there many vassals who had escaped from their lords sought and found

refuge. Thus, constant warfare arose between the nobles and the towns.

48. Hanseatic League.—Eventually compelled to ally themselves for mutual protection, the cities increased in power. The great confederation, known as the *Hanseatic League*, at one period numbered over eighty towns and had its own fleet and armies. Finding in the cities a strong bulwark against the princes and bishops, the emperors constantly extended municipal rights and privileges. The free cities having the emperor for their lord were released from other feudal ties and passed their own laws, which were subject only to the monarch's approval. As a free-man every citizen bore arms and was eligible for knighthood. Trade and the manufactures prospered and civic merchant princes soon became the equals of hereditary nobles.

49. Fall of the Hohenstaufens.—With the downfall of the Hohenstaufen dynasty Germany ceased to be the great central power in European politics. Much of the authority of the state was vested in the archbishoprics of Mentz, Cologne, Treves, Magdeburg, Bremen, and Salzburg, in the dukedoms of Bavaria, Austria, Carinthia, Brunswick, Lorraine, Brabant, Limbourg, and the imperial cities. At length the heads of the various states became convinced that Germany could no longer exist without a government and Count Rudolf of Hapsburg was elected king and reigned from 1273 to 1291.

50. Hapsburg Dynasty.—Rudolf renounced the rights of the Hohenstaufens in Italy, and, having acquired Austria, Styria, and Carniola, presented the three provinces to his son Albert and so founded the long line of kings of the Hapsburg dynasty in Austria. Henry VII, elected emperor in 1308, succeeded in reconciling the Guelfs and Ghibellines, but the reigns of his successors were marked by anarchy and wars.

51. Trial of John Huss.—With the object of reforming the church the Emperor Sigismund caused the pope to convene a council at Constance in 1414. At that time there were three rival popes and their quarrels caused the greatest scandal. The Assembly, which included 18,000 of the clergy, deposed the three

popes and elected a new one, Martin V. This was the council before which John Huss, rector of the University of Prague, who had adopted the views of the English reformer, Wycliffe, was cited to appear. Although promised a safe conduct by the emperor, Huss was convicted of heresy and burned at the stake. Roused to fury by the death of their favourite teacher and by the religious persecutions to which they were subjected, the Bohemians took up arms and it was not until 16 years later that they were finally subdued. A few months before his death, in 1437, Sigismund was recognized as king of Bohemia.

52. The Reformation.—The reign of Maximilian from 1493 to 1519 was remarkable for two events : the division of the kingdom into *Ten Circles*, each having its tribunal for adjusting grievances, and the great *Reformation*, with which the name of Martin Luther is so closely associated.

53. There had long been a widespread desire for the purification of the Church from the abuses that had gradually grown round it. The publication of the Bible, in 1462, did much to enlighten the people and the demands for reform increased. The outbreak came in 1516, when the pope sent an agent to preach indulgence to those who gave money for building the church of St. Peter at Rome.

54. This traffic in indulgences was boldly opposed by Martin Luther, a theological lecturer at the University of Wittenberg, in a series of pamphlets in which he challenged the most learned men to a public dispute on the subject. In 1518 Luther appeared before the Diet of Augsburg to justify himself before the papal authorities and the controversy had reached this stage when Maximilian died in 1519.

55. Charles V, the son of Joan of Castile (daughter of Ferdinand and Isabella), and Philip of Austria, was Maximilian's successor, and as such united the crowns of Spain, Burgundy, and Germany. The first act of the new monarch was an endeavour to effect a settlement in the divisions of the Church. Luther, who, excommunicated by the pope, had gained the

respect of the people, was summoned by the emperor to appear before the Diet of Worms in 1521. "

56. Eventually several powerful princes adopted the Lutheran doctrines and in their provinces convents were suppressed, church lands confiscated, services held in the language of the people, and monks permitted to marry. The new doctrines rapidly spread into Northern Germany, France, Switzerland, England, Norway, and Sweden. In one form or another they were adopted by the bulk of the Teutonic nations while, as a rule, the Latin races remained faithful to the Church of Rome.

ARCHITECTURAL PERIODS

PRINCIPAL FEATURES

57. Early Gothic Period.—In the course of the thirteenth century the Gothic architecture of France found its way to the Rhine, see Fig. 37, and thence to Central and Southern Germany, its course being marked by the erection of a long series of important ecclesiastical buildings. Consequently, at the time when pointed architecture was becoming popular in Germany it had already attained a high state of perfection in France and, as a result, the early Gothic period is only scantily represented in the former country.

58. Middle and Florid Gothic Periods.—German examples of the middle and later periods of Gothic art are very numerous, more especially in the southern parts of the country where the churches are remarkable for their variety of design. Among the many examples of these buildings that are found between Alsace and the borders of Hungary the great cathedrals of Freiburg and Strasburg are especially noteworthy. Ratisbon Cathedral is one of many instances in which the influence of French models was discarded in favour of local ideas and traditions. Its plan shows neither the marked development of the transepts nor the rich elaboration of the choir then customary throughout Western

Europe. For in this building the transepts do not project beyond the aisles and the latter are terminated by separate apses instead of by the usual ambulatory. Occasionally the nave and aisles of German cathedrals were of the same height, a peculiarity almost unknown in the cathedral buildings of other countries.

59. Foreign Influence.—French influence prevailed to a far greater extent in Northern Germany, although here again churches distinctly Germanic in their arrangement of plan are occasionally



FIG. 37

found. Several of the great ecclesiastical buildings of Northern Germany show no trace of foreign influence. The western fronts have no central entrances and otherwise the plans are not in accordance with French ideas, for, while the apses and chapels retain the polygonal form, ambulatories and chevets are abandoned.

60. Hallenkirchen Type.—Brick architecture reached a remarkable stage of development in the German coast districts, especially

in the Slavonic countries, which were not christianized until the twelfth century. Many of the brick churches of Northern Germany are of the so-called *Hallenkirchen* type; that is to say, they resemble halls rather than churches. In these buildings the traditional disproportion in the width and height of the nave and aisles disappeared, the latter being made as high and almost as wide as the former. The east ends of these hall churches usually terminated in straight gable walls.

ARCHITECTURAL EXAMPLES

CATHEDRALS AND CIVIC BUILDINGS

61. Cologne Cathedral.—Commenced about the year 1275, Cologne Cathedral, which justly ranks as the greatest Gothic church of Germany, is unmistakably of French origin. As will be seen on referring to Fig. 38, the plan of Cologne Cathedral, in which regularity and symmetry find full expression, presents all the leading characteristics of French Gothic art. For example, its doubled-aisled nave and choir, three-aisled transepts, and radial chevet chapels are reminiscent of the plan of Amiens Cathedral. There is a slender spire over the crossing, and the massive towers of

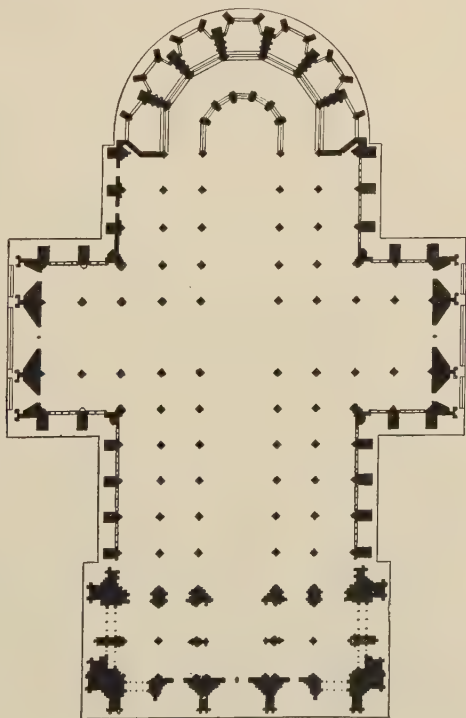


FIG. 38. PLAN OF COLOGNE CATHEDRAL

the west front terminate in lofty spires filled with open tracery and enriched by crockets and finials, as seen in the view, Fig. 40. The fine proportions of this great building are illustrated in the transverse section, Fig. 39.

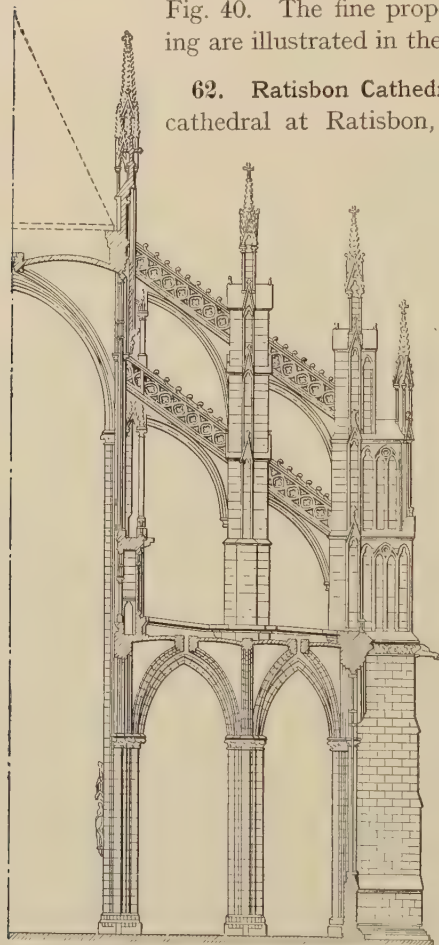


FIG. 39.

TRANSVERSE SECTION OF COLOGNE CATHEDRAL

62. Ratisbon Cathedral.—The plan of the small cathedral at Ratisbon, shown in Fig. 41, is distinctly Germanic in its origin. In this church the transepts are not emphasized externally and three apses take the place of the French chevet. Externally, the triangular porch of the west front, shown in Fig. 42, is noticeable as being an uncommon feature of German churches. The building, which is only 272 feet in length and 114 feet in breadth, was commenced in 1275 and proceeded with, intermittently, for more than two centuries after that date. A transverse section of Ratisbon cathedral is shown in Fig. 43.

63. Ulm Cathedral.

This has a west tower, double aisles, and a short choir; Fig. 44 is a plan and Fig. 45 an exterior view. The choir was built between the years 1377 and 1449; the nave dates from 1477. The single western tower, shown in Fig. 45, is richly panelled and ornamented with tracery. It was raised to 529 feet in 1890.



FIG. 40. COLOGNE CATHEDRAL

64. Civic Buildings.—During the later years of the German Gothic style many fine and picturesque civic buildings were erected, while the domestic architecture of the time possessed a variety of national characteristics among which lofty roofs, stepped and traceried gables, and quaint angle turrets were prominent.

65. Rathaus, Brunswick.—The Altstadt-Rathhaus of Brunswick, commenced in 1250, continued between 1393 and 1396 and completed in 1447 to 1468, is one of the most interesting of the many ancient civic buildings of Germany. It consists of two parts, built at right angles to each other, each of which has a graceful open arcade continued through the two stories of the structure. In each wing the high-pitched roof is terminated by a stepped gable of picturesque outline. Statues of Saxon princes and their wives adorn the nine pillars of the arcades, as seen in the view of this building, Fig. 46.

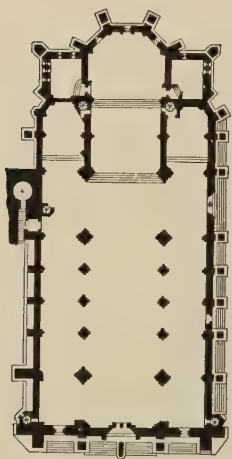


FIG. 41. PLAN OF RATIBON CATHEDRAL

66. Town Hall at Münster.—The picturesque Gothic gable of the Town Hall at Münster is illustrated in Fig. 47. Unfortunately, this otherwise attractive example of German art shows the unconstructional nature of later German work, for the outline of this gable, like others of its kind, bears no relation whatever to the shape of the roof that terminates behind it.

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

67. Plans.—Notwithstanding their great variety, the plans of German Gothic cathedrals display comparatively few national characteristics. Churches with square east ends, with secondary

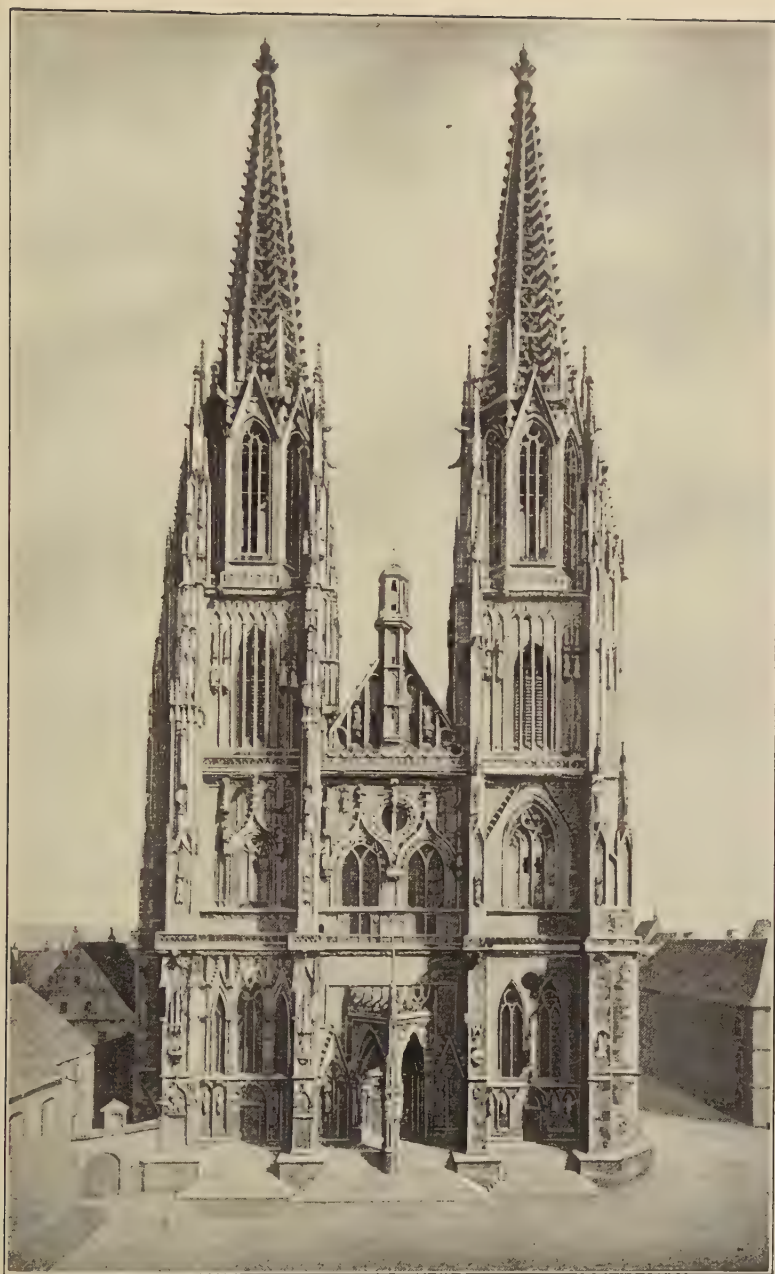


FIG. 42. RATISBON CATHEDRAL

western apses and short choirs, or with a polygonal eastern apse and no ambulatory, are all more or less common. In the thirteenth century French influence led to the free use of the chevet and radiating apsidal chapels. Some German churches, notably Cologne Cathedral, exhibit great regularity and symmetry in

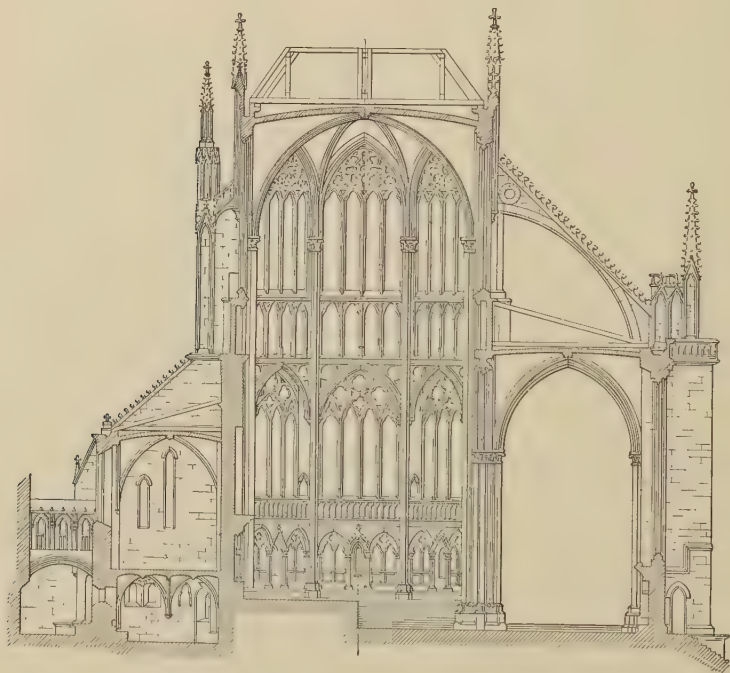


FIG. 43. TRANSVERSE SECTION OF RATISBON CATHEDRAL

their internal arrangement and square western towers are favourite features.

68. Walls.—The small windows, broad wall surfaces, and general massiveness and breadth of design characteristic of the early period of German Gothic art are in great contrast with the slender supports and lofty proportions of the Gothic cathedrals of France and England. Stepped gables of great height and filled with numerous windows are among the distinguishing features of German civic and domestic buildings.

69. Roofs.—Square vaulting bays covering two bays of the aisles were often used, but at a later period vaulting in oblong bays became general. The aisle vaults were often raised to a height equal to those of the nave vaulting resulting in the disappearance of the clerestory and an apparent increase of spaciousness in the interior of the building. Churches of this description were known as hall-churches.

70. Columns.—As a rule the nave arcades had clustered piers, although columns were sometimes used. The arch mouldings were often continued down the piers, as at the cathedral of St. Stephen, Vienna.

71. Openings.—Windows and doorways were narrow in proportion to their height. The use of double tracery in the windows is characteristic of late German Gothic architecture. Occasionally the upper parts of recessed doorways were partially covered with a screen of open tracery. A good example of this treatment is to be seen at the church of St. Sebalt, Nuremberg.

72. Mouldings.—Being usually based on French models, German Gothic mouldings have no special characteristics.

73. Ornamentation.—In the window tracery of the latest period of German Gothic art grace of line and geometrical form were replaced by intricate combinations of twisted representations of boughs of trees or *branch tracery*, as it is termed. The growing taste for undue elaboration brought about the introduction of multiplied decorative ribs, which became a special

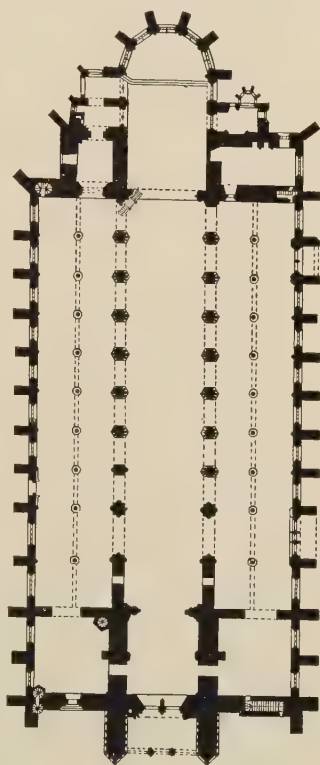


FIG. 44. PLAN OF ULM CATHEDRAL



FIG. 45. ULM CATHEDRAL

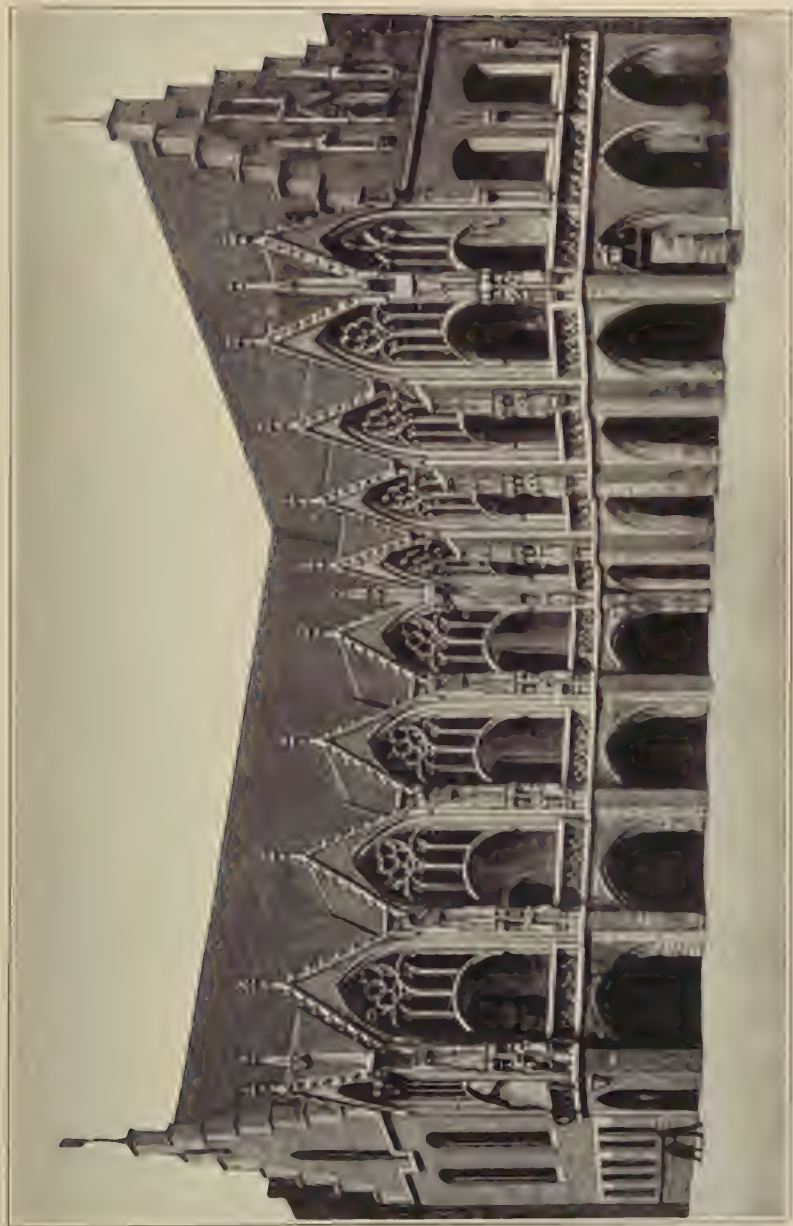


FIG. 46. RATHHAUS, BRUNSWICK

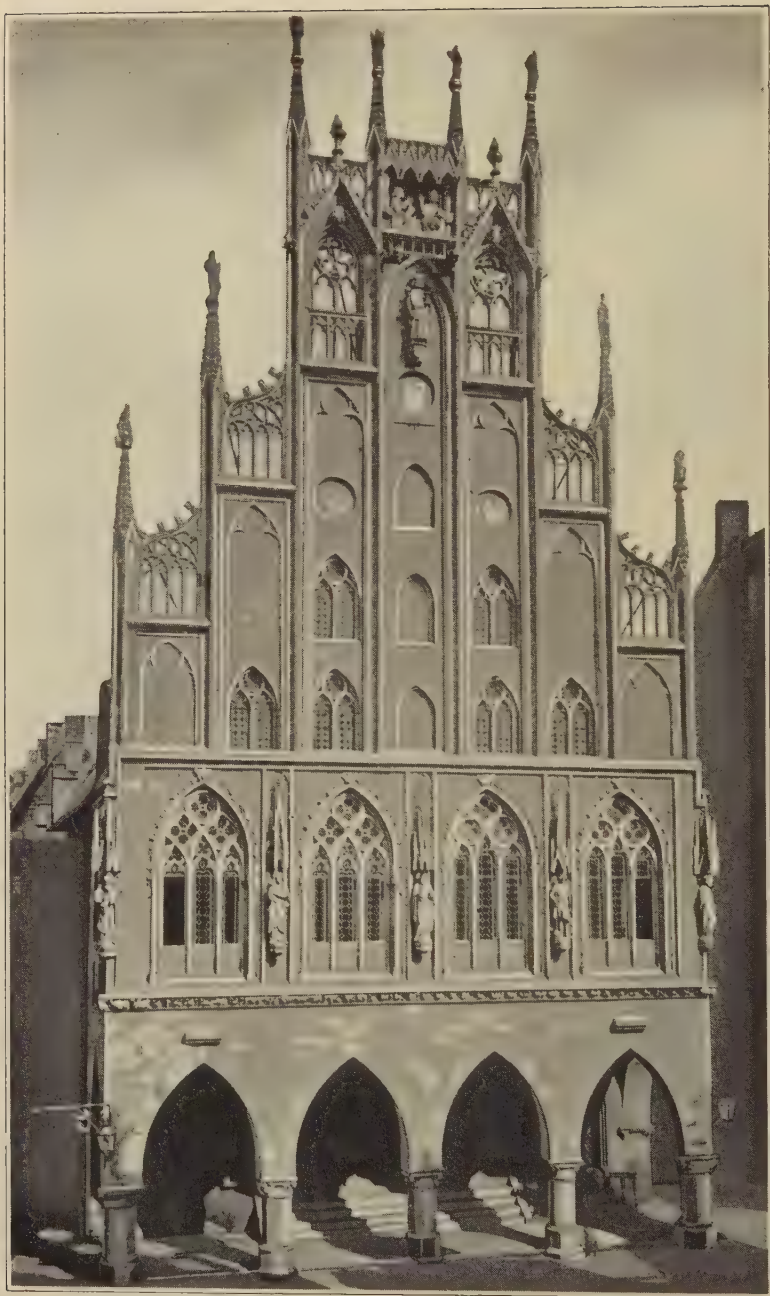


FIG. 47. TOWN HALL AT MÜNSTER

feature of the vaulted ceilings. Sculpture, carving, tracery, and panelling were freely employed for the decoration of German Gothic buildings of the fifteenth century, but except in the buildings of Northern Germany the use of coloured building materials and of inlays and mosaics was not general.

ITALIAN GOTHIC ARCHITECTURE

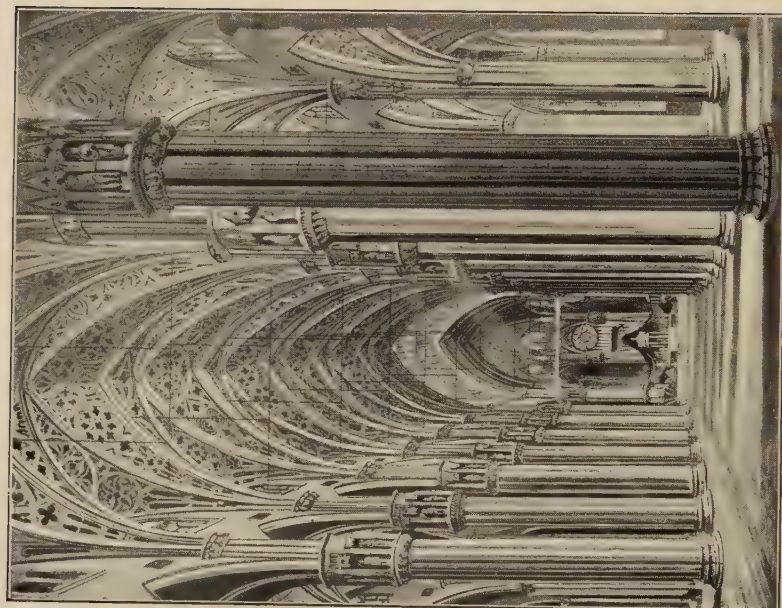
NOTES ON ITALY

HISTORICAL AND SOCIOLOGICAL

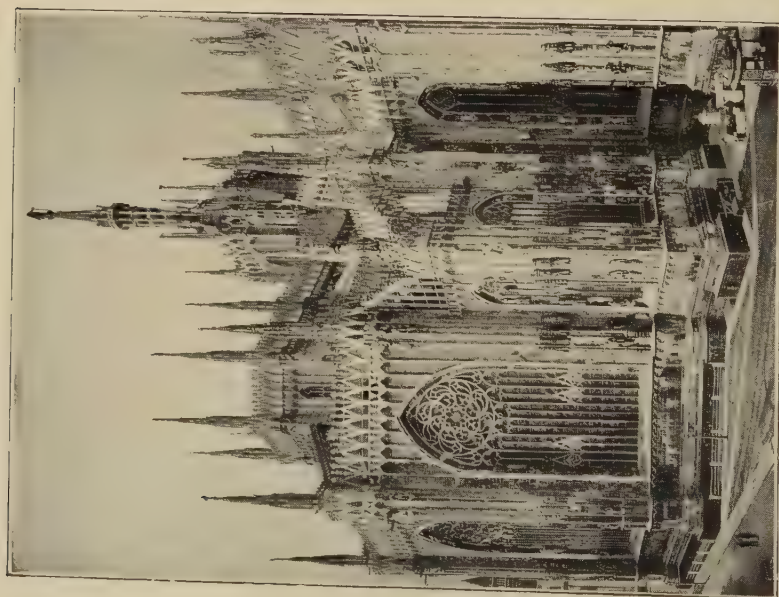
74. Growth and Government of Prominent Cities.—During the greater part of the Middle Ages, Italian history consists of an account of the varying fortunes of the great cities on which the emperors had bestowed special privileges. Municipal independence was tenaciously maintained in these favoured towns and the national spirit of the mediaeval Italians was lost in a more restricted feeling of reverence and affection for the particular city or province in which their lives were passed.

75. Of the republican cities, those of Genoa, Pisa, Florence, and Venice were among the most important and their commerce and wealth were marvellously developed. The difference between the governments of Florence and Venice was very marked and, in some respects, recalled the traditions of antiquity and the old-time rivalry of Sparta and Athens.

76. Florence was a democratic republic in which the spirit of Athenian turbulence was revived, while, like Sparta, Venice clung to aristocratic government. Toward the end of the thirteenth century artists and craftsmen became all-powerful in Florence, and the public jealousy felt for the nobles increased to such an extent that it became necessary for any man of aristocratic birth, who was desirous of filling a public office, to disenable himself and to inscribe his name on the list of one of the guilds of handicrafts. In Venice, on the other hand, all authority was in the hands of the nobles, who were so jealous of the freedom of the citizens that they supported the secret tyranny of the real administrators of the city, known as the Council of Ten.



(b)



(a)

FIG. 48. MILAN CATHEDRAL

77. In Rome, the imperial prefect, the pope, and the municipality contended for authority, and the nobles, who possessed strongholds and castles in the heart of the city, quarrelled perpetually. One of the most deadly feuds was that between two ancient families, known as the Colonnas and the Orsini, and the streets of the city were often deluged with the blood that flowed in their perpetual quarrels. In 1347 an attempt was made by Rienzi to revive the ancient republic. His fiery eloquence moved the people to elect him tribune, but, after ruling Rome for a short time, the nobles rose against him, his supporters fell away, and Rienzi, the last of the Roman tribunes, was slain in a civic riot.

78. From 1350 to 1500 there is no national history of Italy, for the cities, other than the republican ones, were ruled by local families and the period is marked by a succession of civil wars and internal dissensions.

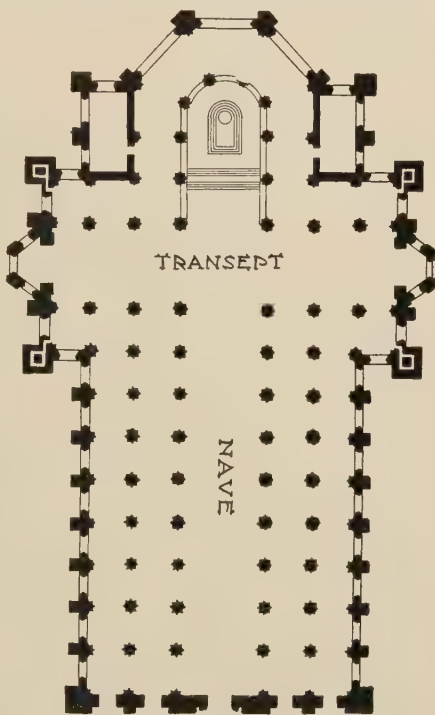


FIG. 49. PLAN OF MILAN CATHEDRAL

ARCHITECTURAL EXAMPLES

CATHEDRALS AND PALACES

79. **Characteristics.**—Italian Gothic art was not gradually evolved from the Romanesque style, but was introduced into the country by foreign architects in a mature and perfected condition.

Its subsequent general adoption by the Italians was merely in consonance with the tendency of the age. Never wholly free from Italianizing influences, it was so far transformed that the constructional elements of Gothic art were often degraded to merely decorative purposes, and other normal characteristics of mediaeval architecture, such as the twin western towers and



FIG. 50. TRANSVERSE SECTION OF MILAN CATHEDRAL

flying buttresses, were usually altogether absent from Italian Gothic churches.

But if, by these deviations from the ordinary type, Gothic art in Italy lost much of its peculiar character, yet the Italians succeeded in rendering the style compatible with the atmosphere, light, and natural surroundings of their country.

80. Milan Cathedral.—The exterior of Milan Cathedral is shown in Fig. 48 (*a*), and a view of the interior at (*b*). Built in 1389 to 1418, it is remarkable as being, with the exception of

that at Seville, the largest of all Gothic cathedrals. Its plan, shown in Fig. 49, comprises a wide nave with double aisles, transepts, a short choir, and a polygonal apse, the whole covering an area of 14,000 square yards. The dome at the crossing, which is surmounted by a slender spire, as shown in Fig. 48 (a), is 220 feet in height.

As will be seen on reference to the interior view, and to the transverse section, Fig. 50, the nave has small clerestory windows but no triforium. Its arcading consists of pillars 12 feet in diameter the summits of which are crowned with canopied niches. Milan Cathedral is built entirely of white marble and is profusely adorned, both externally and internally, with statues and carved enrichments.

81. Florence Cathedral.—The plan of Florence Cathedral, Fig. 51, is in striking

contrast with that of Milan and is far more characteristic of Italian Gothic architecture. Built in the early part of the fourteenth century, this church is the finest of its kind in Italy. The simplicity of its plan and the liberal proportions of its constituent parts will be seen from its longitudinal section, Fig. 52. As seen from Figs. 53 and 54, the walls of the building, inlaid in panels of coloured marble, are wholly devoid of buttresses and pinnacles. The lofty dome, 138 feet in diameter,

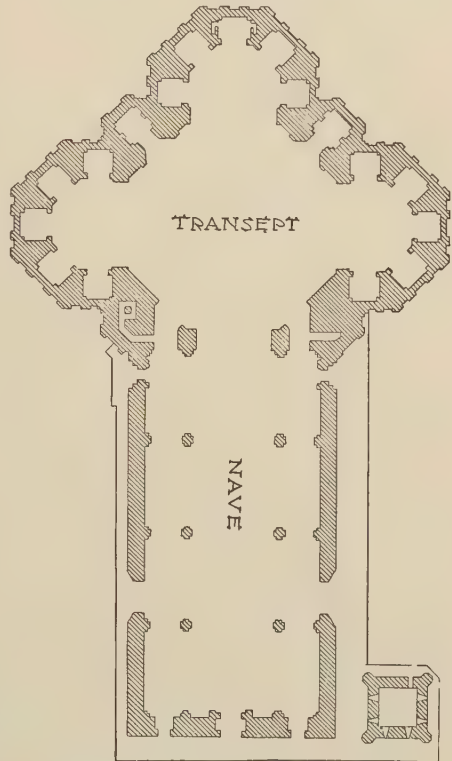


FIG. 51. PLAN OF FLORENCE CATHEDRAL



FIG. 52. LONGITUDINAL SECTION OF FLORENCE CATHEDRAL



FIG. 53. FLORENCE CATHEDRAL PREVIOUS TO THE ADDITION OF THE WEST FAÇADE



FIG. 54. FLORENCE CATHEDRAL WITH THE NEW FAÇADE

added by Brunelleschi between the years 1420 and 1444, belongs to the early Renaissance period. Internally, the church is dignified and monumental in appearance, a result largely due to the wide spacing of the nave arcading. Fig. 53 is a view of the cathedral as it appeared before the modern west front was added, while Fig. 54 illustrates the new façade.

82. The Campanile, Florence.—This detached *campanile*, or bell-tower, Fig. 54, was commenced by Giotto in 1334 to 1336 and completed after his death by Andrea Pisano and Franc Valenti. It consists of a richly decorated square structure 292 feet in height, built of coloured marble and divided into a lofty base and four upper stories.

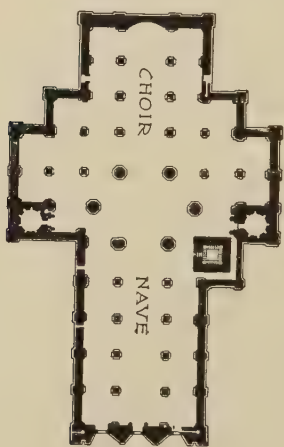


FIG. 55.
PLAN OF SIENA CATHEDRAL

83. Siena Cathedral.—The cathedral at Siena was commenced in 1243; its plan, which is shown at Fig. 55, possesses some marked peculiarities. For instance, the dome of the crossing, which in plan is an irregular hexagon, is not centrally placed and the campanile occupies an unusual position to the west of the transepts. The west façade, a profusely decorated marble structure, has three lofty

gables forming the terminations of the nave and aisles, pinnacled turrets, deeply recessed portals, and a large central circular window, as seen in the view of this front, Fig. 56. A unique and unrivalled work of art is seen in the pavement of the church, which consists of dark-grey marble slabs inlaid with white illustrating biblical events.

84. Santa Croce, Florence.—Fig. 57 illustrates the interior of the Franciscan church of Santa Croce, or Holy Cross, at Florence. Its plan, based on that of an early Christian basilica, comprises a nave and aisles, narrow transepts, and a short choir. Its timber roof rests on the upper part of the nave arcade, which



FIG. 56. SIENA CATHEDRAL

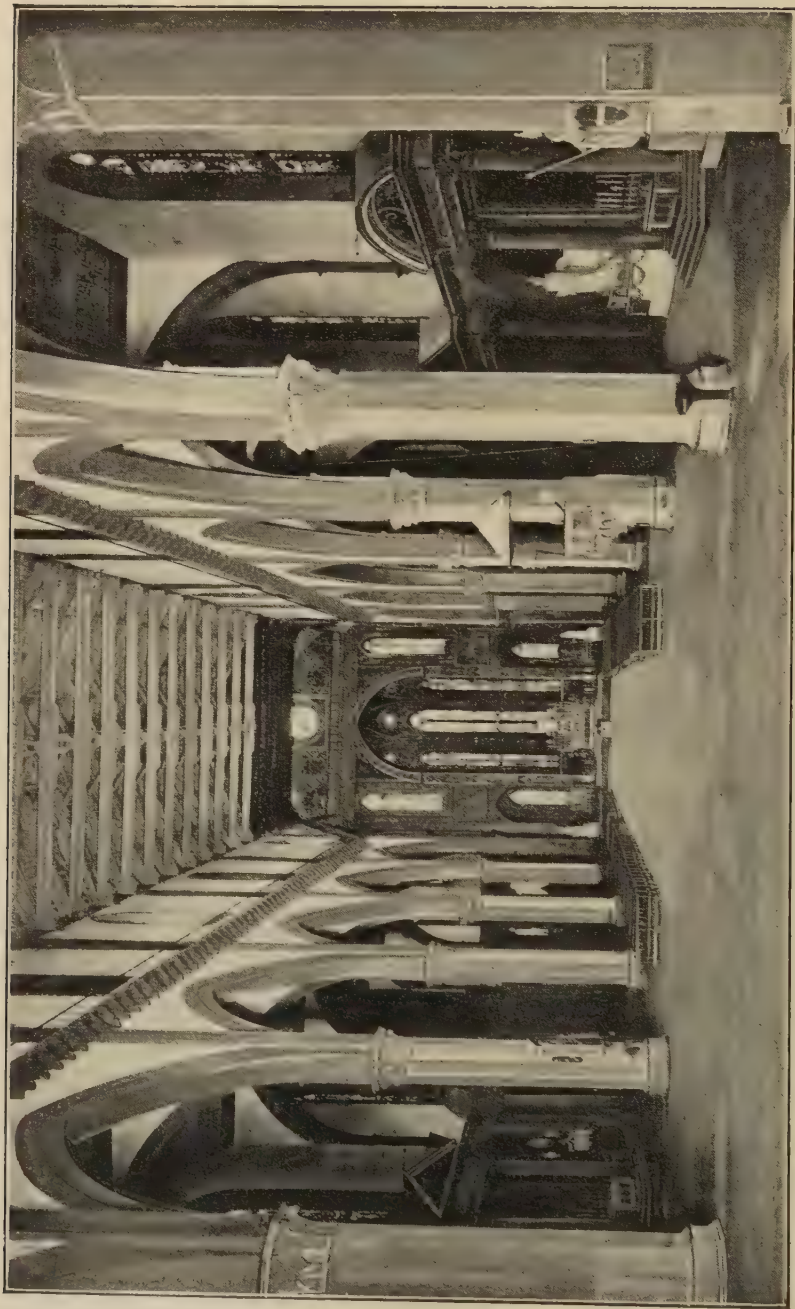


FIG. 57. INTERIOR OF THE CHURCH OF SANTA CROCE, FLORENCE

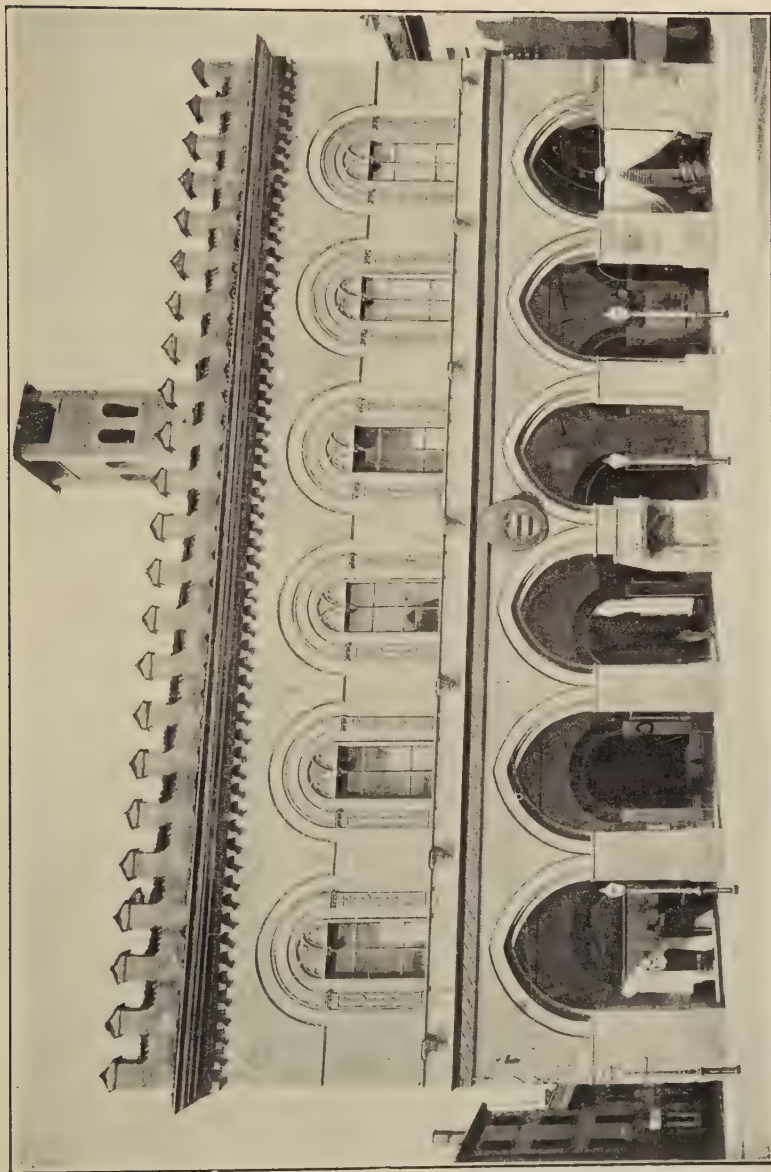


FIG. 58. PALAZZO PUBBLICO CREMONA



(a)



(b)

FIG. 59. PALACE OF THE DOGES, VENICE

has pointed arches of considerable width and octagonal piers, as seen in Fig. 57. Numerous monuments erected to the memory of celebrated men, and frescoes by Giotto and his successors, add to the internal effect of this fine church.

85. Palazzo Pubblico, Cremona.—The Palazzo Pubblico, or Council Hall of Cremona, dates from 1245 and possesses many of the chief characteristics of Italian Gothic architecture; for instance, in the juxtaposition of the pointed arches of the fine arcade with the circular-headed windows of the upper story and in the strongly marked and boldly projecting cornice that forms the crowning feature of the façade, as shown in Fig. 58.

86. Palace of the Doges.—This splendid example of an Italian Gothic municipal building adjoins the church of St. Mark at Venice. The two-storied arcades of the west and south fronts, illustrated in Fig. 59 (*a*) and (*b*), are said to date from 1354, but the upper parts of these façades consist of badly designed later additions, entirely out of harmony with the architectural detail and scale of the lower portions.

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

87. Plans.—Consequent on an endeavour to repeat the internal spaciousness and breadth that characterized the basilicas of ancient Rome, Italian Gothic ecclesiastical architecture is unlike the pointed Christian art of any other country. For example, the narrow lofty aisles, numerous piers or columns, and the multiplication of component parts, typical of the Gothic cathedrals in France and England, are rarely seen in Italy. On the contrary, squareness and simplicity of plan are associated with Italian churches in which the French chevet, with its numerous small chapels, never became a popular feature.

88. Walls.—The thick unbuttressed walls were rarely relieved by base mouldings, but the cornice was so strongly accentuated

that it often became a dominant feature of the design. Small windows and wide flat wall surfaces veneered with marble, or faced with materials of different colours in alternate courses, were preferred to the small wall spaces broken by deep buttresses of other countries. The campanile, which was often quite detached from the main building, was a special feature of Italian churches and its use was also extended to secular buildings.

89. Roofs.—Simple vaults, of wide span and without ribs, were preferred to those of a more ornate kind and the central dome was a characteristic feature of the larger churches. Flat, or almost flat, wood ceilings were common, and in many instances the steep gables of the front façades merely masked and did not properly define the true outlines of the roofs behind them.

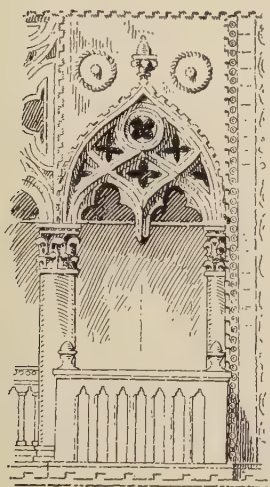
90. Columns.—Widely spaced heavy round pillars, or massive piers, with foliated capitals, separated the nave of the church from its aisles.

91. Openings.—Round and pointed arches were used indiscriminately for the door, window, and other openings of the same building. Cusped window heads were common and the ogee-shaped arch was in general use.

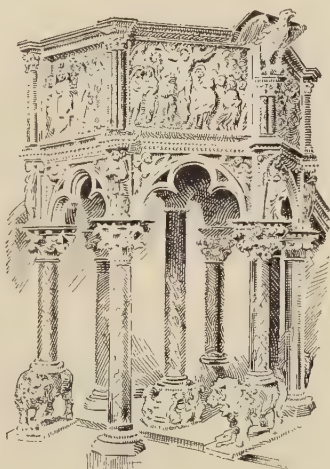
92. Mouldings.—The mouldings, except the main cornices, were flatter and far less bold in outline than those of northern countries and the enrichments slight and unimportant.

93. Ornamentation.—Owing to the brilliancy of the Italian atmosphere the introduction of vast traceried windows filled with painted glass, such as those seen in the Gothic buildings of northern countries, was undesirable. The consequent use of small windows, combined with the general absence of buttresses, tended to create the large unbroken wall surfaces that are characteristic of Italian Gothic buildings and caused their decorative treatment to differ from that of any other country. Thus, climatic influence, in addition to a national instinct for richness of effect, and the free command of a plentiful supply of marble, enabled the mediaeval artists of Italy to become pre-eminent in decorative art. Plain wall surfaces were either relieved by alternate courses

of different-coloured marble, as at the cathedrals of Genoa and Siena, or veneered with marble panels, as in the Campanile at Florence. In fact, inlaid and mosaic patterns and polychromatic



(a)



(b)

marble panellings were common decorative features of Italian churches, some of which were also lavishly enriched with fresco paintings and many fine examples of the sculptor's art.

94. Various examples of Italian Gothic ornamentation are shown in Fig. 60. For instance, illustrations (a) and (c) represent two typical examples of window openings and external galleries from the Venetian palaces on the Great Canal. These windows show the customary Italian predilection for the squareness of effect gained by emphasizing horizontal lines.



(c)

FIG. 60

In both cases the openings start from strongly moulded sills and are

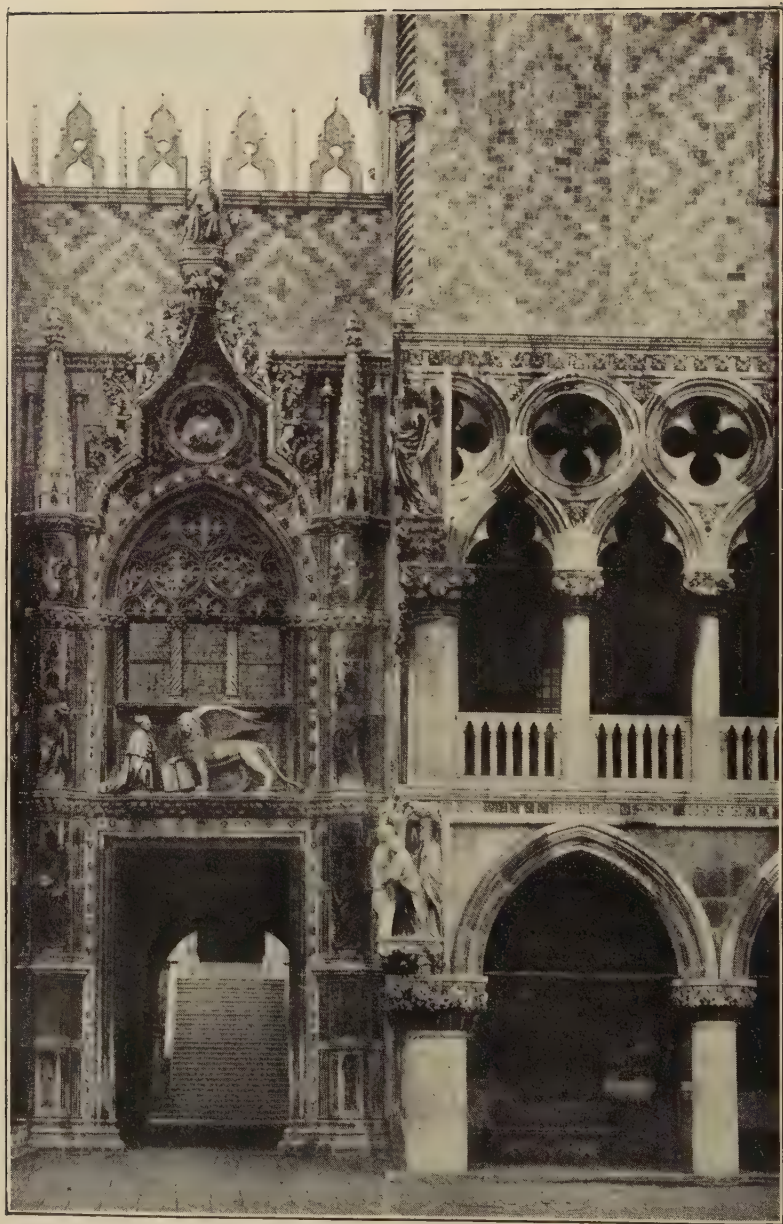


FIG. 61. PORTA DELLA CARTA, DOGE'S PALACE, VENICE

surrounded by flat square-headed enrichments, with the result that each window becomes rectangular in form. Fig. 60 (*b*) illustrates the famous hexagonal marble pulpit at the Baptistery of Pisa, erected by Niccolo Pisano in 1260. The upper part, borne by seven columns, contains five panels filled with sculptured reliefs of the Nativity, the Adoration of the Magi, the Presentation in the Temple, the Crucifixion, and the Last Judgment. These reliefs are remarkable as being very early examples of the subsequent general revival of antique art known as the *Renaissance*.

95. Italian Gothic ornamentation, which in this example shows traces of the coming transition from Gothic to Classic form, is seen at its best in the fine doorway, known as the Porta della Carta, of the Doge's Palace at Venice, illustrated in Fig. 61. This richly decorated structure, designed by Giovanni and Bartolemeo Buono, was erected in 1438 to 1443. The flat-headed doorway and the lower part of the flanking turrets are more suggestive of Renaissance than of Gothic architecture, but the upper part of the gateway, including the fine pointed window and quaintly shaped gable, possesses all the main characteristics of Italian Gothic art.

BELGIAN GOTHIC ARCHITECTURE

NOTES ON BELGIUM

GEOGRAPHICAL AND HISTORICAL

96. Geographical.—As will be seen on reference to the map, Fig. 62, the small country of Belgium which, with Holland, was formerly known as the Netherlands, is bounded on the north by Holland, on the east by Germany, on the south and south-west by France, and on the north-west by the North Sea. Belgium is divided into the provinces of Antwerp in the north, west and east Flanders in the west, Namur and Hainault in the south, Luxembourg in the south-east, Liege and Limbourg in the east, and Brabant in the centre. The country in general is very flat,

and in the provinces bordering on the sea the land is often so low as to require dikes to protect it from inundation.

97. Geological.—Marble is abundant in Belgium and there are numerous quarries of freestone, granite, limestone, and slate.



FIG. 62

98. Climate.—The climate of Belgium is very similar to that of England, but it is somewhat hotter in summer and colder in winter.

99. Historical.—In the time of the Romans this portion of the Netherlands, included in Gaul, was inhabited by Celtic and Germanic tribes. During the fifth and sixth centuries Germanic people predominated and formed the principal element of the population then under the dominion of the Franks. Thus, for several centuries the history of the Netherlands is comprised in that of the Franks, but at a later period the country was divided into a number of independent duchies and free cities. Of these independent provinces the country of Flanders ultimately became prominent and was distinguished for its industry and commercial activity. On the extinction of the male line of the counts of Flanders, in 1385, the province passed into the hands of the Dukes of Burgundy, who eventually obtained possession of the whole of the Netherlands.

100. In order to strengthen their power the new owners of the country endeavoured to curtail the liberty of the people and to do away with many of the free institutions that had sprung up throughout the Netherlands. But, nevertheless, the country continued to increase in wealth and prosperity, and industry and commerce flourished. In 1477, by the marriage of Mary of Burgundy, daughter and heiress of Charles the Bold, with the Archduke Maximilian, the Netherlands came into possession of the House of Austria.

101. On his accession to the imperial throne, in 1493, the Emperor Maximilian resigned the government of the Netherlands to his son Philip, who was succeeded in 1506 by Charles V. It was during the reign of this monarch, and that of his successor, Philip II of Spain, that the bitter persecution of Protestants took place. But an attempt to establish the Inquisition in the country drove the people into open rebellion. Sent at the head of a Spanish army to reduce the Netherlands to subjection, the Duke of Alba devastated the country and subjected the inhabitants to barbarous cruelties.

102. Ultimately the northern part of the Netherlands succeeded in establishing its independence and became the republic of the seven united Provinces, while the southern portion, Belgium

proper, continued under the rule of Spain. In 1598 Philip II ceded Belgium to his daughter Isabella and her husband, the Archduke Albert, under whom it became an independent kingdom. Albert died without heirs and the country again passed into the hands of Spain and shared in the declining fortunes of that kingdom.

ARCHITECTURAL PERIODS

PRINCIPAL FEATURES

103. The Culmination of Pointed Architecture.—Pointed architecture arrived at its perfection in Belgium about the commencement of the twelfth century and flourished there until the latter half of the sixteenth century. During that period the style underwent considerable modifications, which, in their general tendency, were similar to those apparent in the parallel phases of French, German, and English Gothic art.

104. Periods of Development.—The periods of Gothic art in Belgium are usually classified as follows: (1) The Primary period, which lasted from the eleventh to the close of the thirteenth century. (2) The Secondary period, from the fourteenth to the latter half of the fifteenth century. (3) The Tertiary period, extending from the latter half of the fifteenth to the latter half of the sixteenth century.

105. Buildings Preserved From the Middle Ages.—Buildings erected in Belgium during the Middle Ages were of the following types: (1) Religious buildings, comprising churches and monasteries. (2) Civil edifices, such as hôtels de ville, or town halls, bell-towers, and the principal city habitations. (3) Military buildings and fortifications. The greater number of the structures comprised under the last division have either been destroyed or their original characteristics completely lost by subsequent alterations and external mutilations. But with regard to the second division, the Belgian architecture of the Middle Ages stands almost unrivalled.

106. Receiving important municipal privileges and acquiring great wealth, the free cities of Belgium delighted in displaying their opulence in the erection of wonderfully ornate and costly hôtels de ville and civic buildings for the accommodation of the various guilds. The ecclesiastical buildings comprised under the first group mentioned in the preceding article included almost perfect models of their kind of each period of Gothic art, as it was understood and developed in Belgium.

107. Characteristics of the Principal Periods.—The essential characteristics of the Primary period are found in the long and narrow form of the windows, doors, and arches, the square pillars or round columns of the nave arcades, the simple foliated capitals, and the moulded groins of the pointed vaults. The Secondary, or Rayonnant, period was marked by a general increase in the size and richness of the door and window openings. The doorways, flanked with pinnacles and canopied niches, were frequently surmounted by gables. Columns of this period, usually round, with octagonal bases, had their capitals adorned with vine leaves or other foliage, but sometimes they consisted of angular and square members grouped together without capitals.

108. Buildings of the Tertiary, or Flamboyant, period were distinguished by the distorted and irregular forms, resembling flames, of the window tracery and by the moulded groins that divide the vaulting into a large number of angular compartments. Depressed flat-pointed and elliptical arches, plain or trefoiled, were common, and the ornamentation peculiar to the style consisted of pendants, finials, wreaths, foliage, and medallions. The columns that formed the internal divisions of the churches were either cylindrical or composed of a series of clustered angular mouldings.

ARCHITECTURAL EXAMPLES

ECCLESIASTICAL AND CIVIC BUILDINGS

109. Tournai Cathedral.—The Cathedral of Notre Dame, at Tournai, consists of a nave and aisles, transepts, a retrochoir, and a series of chapels. As will be seen on reference to the

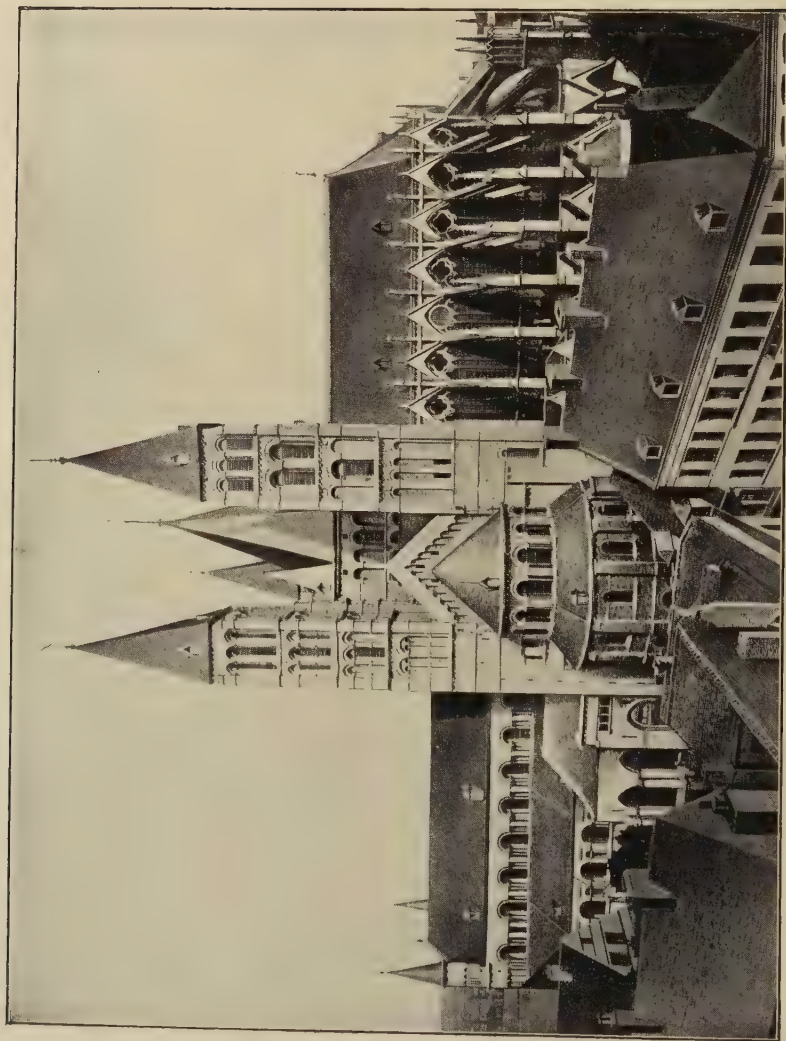


FIG. 63. TOURNAI CATHEDRAL

external view, Fig. 63. the nave and transepts of this fine church are of the Romanesque style of architecture, while the lofty



FIG. 64. BRUSSELS CATHEDRAL

choir is a Gothic structure of a much later date. Internally, the vaulted nave of the church rises to a height of 78 feet, the walls above the aisles being relieved by a triforium and clerestory-

The large chapel, adjoining the left aisle, was added in 1516 to 1518. Five towers, dating from the eleventh century, rise from the transepts and the crossing. Four of these towers are pierced with rows of small semicircular-headed windows and the fifth with semicircular-headed openings alternating with others in

which the pointed arch is used. The unusual height of the choir, as compared with that of the nave, is a remarkable feature of this cathedral.

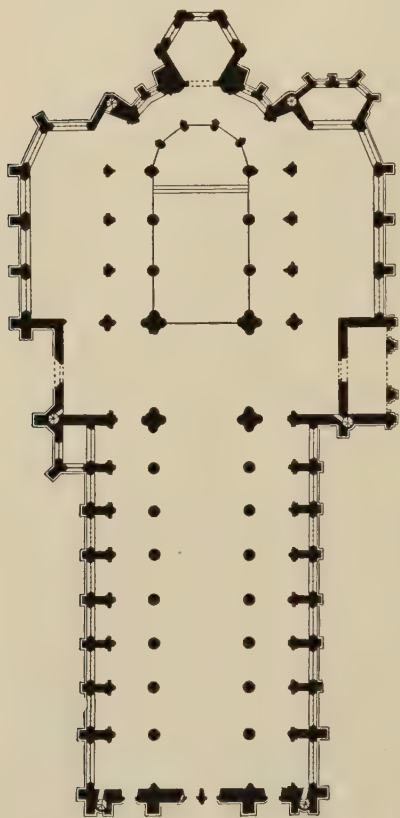


FIG. 65. PLAN OF BRUSSELS CATHEDRAL

110. Brussels Cathedral.

The open position and fine approach, by a wide flight of steps, of this excellent example of Belgian Gothic art add considerably to its general attractiveness. Of the four doors that form the western entrances two are placed by themselves beneath the flanking western towers and two are combined under the archway of the central porch, as seen in Fig. 64. Originally the aisles of the chancel, like those of the nave, were bordered by chapels separated from the aisles by pointed arches springing from clustered

columns. These chapels were subsequently removed, those on the left in 1534 and those on the right in 1649, to make way for the two large chapels that now occupy the whole length of the chancel, as seen in the plan, Fig. 65. The small chapel behind the apse of the church was added in 1679. As shown in Fig. 66, flying buttresses ornamented with crockets and finials support

the vaulting of the nave and chancel and the windows of the transepts and nave are enriched with roses, trefoils, quatrefoils, and other features of the Rayonnant period. The chancel belongs to the Early Pointed, or Primary, period and the rest of the church, with the exception of the large chapels and some external ornaments of the nave, which are of the Flamboyant period, to the Secondary period of Belgium Gothic art.

111. Antwerp Cathedral. — Antwerp Cathedral, the largest and most beautiful Gothic church in the Netherlands, is illustrated in plan in Fig. 67 and in transverse section in Fig. 68, while a view of the interior is given in Fig. 69. The church, which is of cruciform shape, as seen from Fig. 67, consists of a nave and triple-vaulted aisles of unequal width, shallow transepts, and a chevet and side chapels. Commenced in 1352, the nave was not completed until 1449. The choir, ambulatory, and chapels belong to the

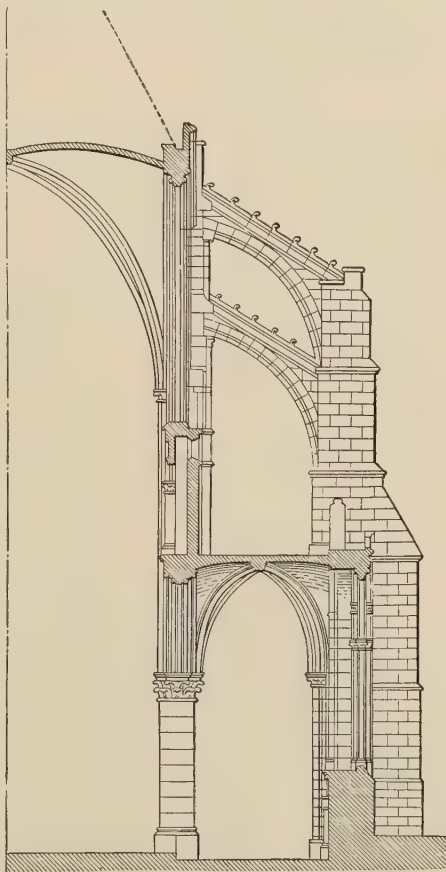


FIG. 66.

TRANSVERSE SECTION OF BRUSSELS CATHEDRAL

same period, 1352 to 1449, and the aisles to the fifteenth century, but the vaults of the nave and aisles were not constructed until the commencement of the seventeenth century. Externally,

the upper part of the north tower, seen in the view of the west front, Fig. 70, is a beautiful example of Flamboyant architecture. It was completed in 1518, but the south tower was left unfinished in 1474.

112. Church of St. Jacques, Liege.—Founded in 1016, the dedication of the abbey church of St. Jacques, at Liege, took

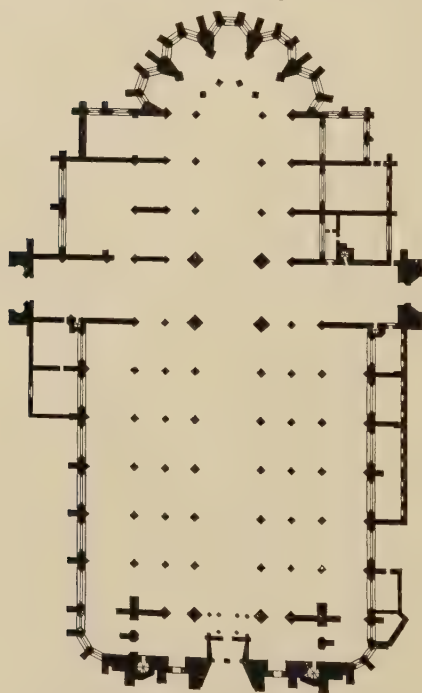


FIG. 67. PLAN OF ANTWERP CATHEDRAL

place in 1030. On the demolition of this building, in 1522, the tower and entrance were retained and incorporated with the present church, which, completed in 1538, is one of the finest examples of late Gothic architecture in Belgium. Its plan, shown in Fig. 71, consists of a polygonal choir encircled by small chapels, transepts, and a nave and aisles, separated by rows of clustered columns carrying pointed arches. The triforium has a series of mullions and trefoiled arches, surmounted by a balustrade of panelled quatrefoils and trefoils; the wall spaces are covered

with arabesques and adorned with medallions. There are no side chapels, but coupled blank arches relieve the wall surfaces; and the windows of the nave and transepts are decorated with Flamboyant carving of rich and varied design. The chancel, lighted by long lancet windows, filled with some fine painted glass, is especially remarkable for the richness and beauty of its decoration, consisting, in the main, of statues placed in canopied niches. The present entrance of the church, on the

left of the nave, is notable for a fine vaulted porch, of which a longitudinal and a transverse section are shown in Fig. 72. The vaulting of the church, divided into angular compartments and covered with painted arabesques, is of a very unusual character.

113. The Belfry of Bruges.—The original wooden structure, having been destroyed by fire, was replaced toward the close of the thirteenth century by the present brick belfry, which rises

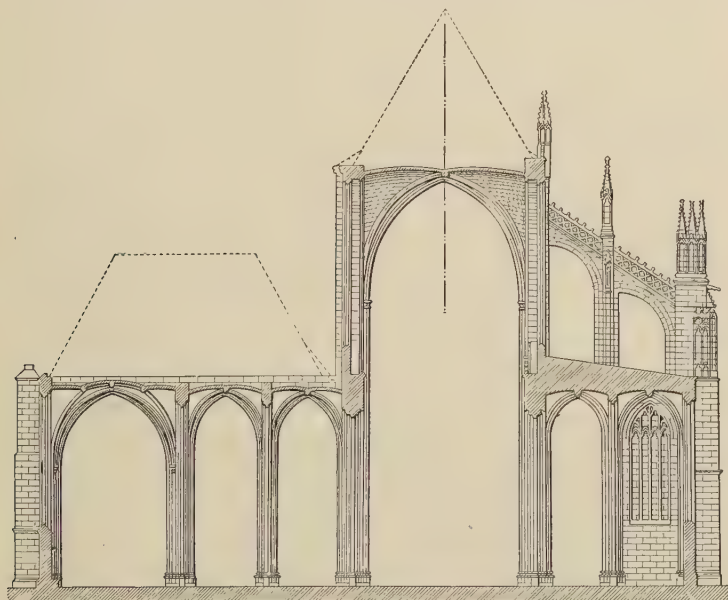


FIG. 68. TRANSVERSE SECTION OF ANTWERP CATHEDRAL

to a height of 352 feet. Of the three receding stages into which the tower is divided the lower and middle are square in form. The former, containing the principal entrance to the market building to which the belfry is attached, is crowned by a projecting gallery pierced with arched openings and flanked by four corbelled battlemented turrets, as shown in Fig. 73. Above the coupled lancet windows of the second stage there is an open balustrade terminating in large angle turrets. The octagonal third stage, which dates from the end of the fourteenth century, is pierced by eight long and narrow pointed arched openings.

114. **Hôtel de Ville, Bruges.**—The façade of the Hôtel de Ville at Bruges, illustrated in Fig. 74, dates from about 1387 and is a stately and refined example of the middle period of Belgian



FIG. 69. INTERIOR OF ANTWERP CATHEDRAL

Gothic art. Numerous niches placed between the windows contain statues of the counts of Flanders and there is a fine fourteenth-century wooden roof over the great hall which extends throughout almost the entire frontage of the building.



115. Hôtel de Ville, Brusseis.—Fig. 75 illustrates the façade of the Hôtel de Ville, Brussels, the foundations of which were laid about the year 1402, but only a portion of the front building was then constructed. The works were resumed in 1444, when Charles the Bold, Duke of Burgundy, laid the first stone of the lofty tower. Toward the close of the fifteenth century the southern wing and the façade to the Rue de la Tête d'Or were completed in the style of the period. The principal front has a portico of seventeen pointed arches, above which is a richly decorated parapet, and the upper walling is pierced by two tiers of square-headed windows. Each angle of the building is flanked by an octagonal turret.

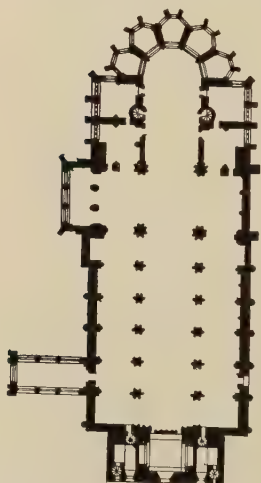


FIG. 71. PLAN OF THE CHURCH OF ST. JACQUES, LIEGE

116. Hôtel de Ville, Louvain.—Commenced in the year 1448 and completed 15 years later, the Hôtel de Ville, at Louvain, is perhaps the finest building of its kind erected during the Middle Ages. The structure is remarkable for the regularity of its plan, the perfection of its proportions, and, above all, for the richness and variety of the innumerable sculptured figures with which the walls are adorned. Its principal front has three tiers of pointed windows rising above a lofty base, as seen in Fig. 76. The horizontal wall surfaces between the windows are elaborately panelled and otherwise decorated.

117. The Cloth Hall, Ypres.—The Cloth Hall at Ypres was commenced in 1201 and completed at the beginning of the succeeding century. Its long front, 460 feet in extent, is pierced by two rows of pointed windows and flanked by angle turrets. A narrow square belfry 230 feet high rises from the centre of the façade. The modern statues that adorn the façade replaced the original figures of princes who bore the title of Count of Flanders.

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

118. Plans.—Although external porches are rarely found, the principal doorway of a Belgian Gothic church situated at the

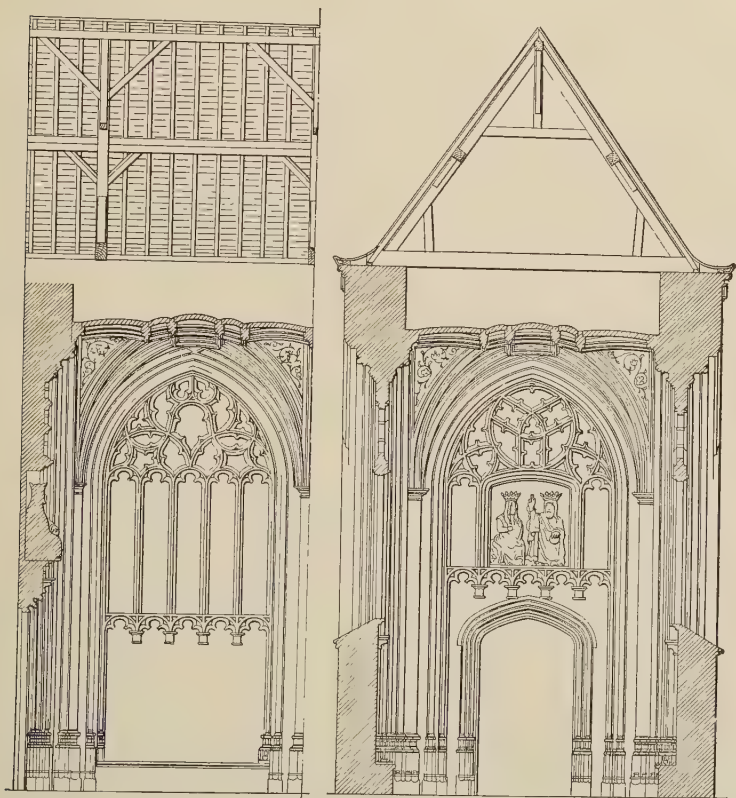


FIG. 72. LONGITUDINAL AND TRANSVERSE SECTIONS OF CHURCH OF ST. JACQUES, LIEGE

western end of the nave is always isolated by an inner lobby or narthex. The towers, square in form, and pierced with tiers of small windows, are usually either placed by themselves at the head of the nave or flank the sides of the central entrance.



FIG. 73. BELFRY AT BRUGES





FIG. 75. HÔTEL DE VILLE, BRUSSELS



Churches of the Early Pointed period are distinguished by a simple cruciform plan in which the transepts have only slight projections. These elements are preserved in the church plans of the Secondary and Tertiary periods, but often with the addition of rows of side chapels.

119. Walls.—As in other countries in which Gothic architecture reached its full development, the strength of the structure was based on that of the weight-sustaining piers and buttresses and not on the support afforded by the intervening walls.

120. Roofs.—The vaulted roofs were almost invariably pointed and the groins had moulded ribs.

121. Columns.—The columns forming the internal divisions of the church were either cylindrical, as in the early period, or composed of angular mouldings united in clusters, as in the later Belgian Gothic style.

122. Mouldings.—The mouldings, usually composed of simple rounded and angular members, were often relieved with carved grotesques and other enrichments.

123. Ornamentation.—The capitals of columns in the Early Pointed period were generally adorned with foliage of a conventional character, but in the Middle and Late periods the carving was often directly copied from nature. As a rule, Belgian Gothic ornamentation shows foreign influence, chiefly French and German.

SPANISH GOTHIC ARCHITECTURE

NOTES ON SPAIN

GEOGRAPHICAL AND HISTORICAL

124. Geographical.—The Spanish Peninsula is isolated from the rest of Europe by the Pyrenees mountains that separate it from France and the Mediterranean Sea which forms its eastern and southern boundaries. Its western and northern coasts, as shown in the map of Spain, Fig. 77, are bounded by the Atlantic Ocean and the Bay of Biscay.

125. Geological.—A belt of chalk, extending from the Bay of Biscay to the Mediterranean, gives place in Central Spain to an immense expanse of limestone formation. The north-west corner of the country consists of granite and volcanic rock.

126. Climate.—In Central Spain the summer months are very hot and the winters extremely cold. The climate is more equable on the east coast, but burning winds blow from the African deserts into the provinces of the south.



FIG. 77

127. Historical.—Spain was originally peopled by the Iberians, who occupied the whole of the country with the exception of a small portion in the north that formed the Basque province. Afterwards, Celtic tribes settled in North and Central Spain, while the coast districts were occupied by colonists from Phoenicia, Greece, and Rome, but, ultimately, the whole country became a Roman province.

128. On the fall of the Roman Empire vast hordes of barbarians poured into Spain, including the Suevi, who founded a

kingdom in Galicia, and the Visigoths, who reigned in the south. During the Arab invasion of 710 the Christianized and semi-civilized Visigoths found refuge among the mountains of Asturias, whence they gradually began to win back the land of their fathers. Early in the thirteenth century the four Christian kingdoms of Portugal, Aragon, Castile, and Navarre were firmly established in the peninsula and the Arabs, or Moors as they were called in Spain, retained only the kingdom of Granada in Andalusia.

129. The free constitutions of Aragon and Castile ensured the liberty of the people and in the *Cortes*, or national assemblies, of these kingdoms the *third estate*, that is, the commons, secured a place long before representation was granted to the mass of the people in any other European country.

130. The marriage of Ferdinand of Aragon and Isabella of Castile, in 1469, laid the foundation of Spanish power and Granada was wrested from the Moors in 1492. Under Charles I, grandson of Ferdinand and Isabella, the power of Spain reached its zenith. Through his father this monarch inherited the Duchy of Burgundy, the Low Countries, and large possessions in Germany. During the reign of Charles I Peru and Mexico were conquered and annexed to the Spanish crown. At the beginning of the eighteenth century the throne of Spain was occupied by the Bourbon grandson of Louis XIV of France, whose descendants still hold the crown.

ARCHITECTURAL PERIODS

GOTHIC AND MORESCO

131. Moorish Art.—The early Spaniards appear to have had very little knowledge of the arts and sciences. From the beginning of the eighth until the middle of the eleventh century, when the Christian kingdoms were in process of formation and wars with the Moors were of frequent occurrence, the condition of the people was less advanced than in any other civilized nation. The culture that the Visigoths inherited from the Romans had

disappeared and there was scarcely any intercourse with the outer civilized world.

132. The Moors of Spain attained a high degree of civilization, as shown by the numerous monuments of artistic skill scattered throughout the Moorish provinces. These examples of early Moorish art include bridges, castles, aqueducts, mosques, and palaces, the best of which, dating from the period when Cordova was the centre of Arab civilization, were far beyond the capacity of the Spaniards of that age. All the industrial arts and handicrafts were in the hands of the Moors, and even in building their churches the Christians had recourse to the skill and knowledge of infidels, who made the designs and assisted in the construction of the buildings. Later, when the Romanesque style was imported from Christian Europe, Moorish artists and Moorish craftsmen were still employed to erect and adorn the new buildings of the Christian provinces. Thus, whether as slaves captured in war, or as hired workmen, the Moors contributed to the development and civilization of Christian Spain.

133. Romanesque Art.—During the later half of the eleventh century the early Christian architecture of Spain, which had been borrowed from the Moors, was superseded by the Romanesque art, then dying out in Western Europe. The succeeding century was notable for the introduction into Spain of the Pointed, or Gothic, style, of which Leon Cathedral, commenced in 1181 and completed in 1303, is one of the earliest and best examples.

134. Early Gothic Architecture.—With the capture, by the Christians, in 1085, of the ancient city of Toledo the decline of Moorish dominion in Spain set in, and the prospect of ultimately freeing the whole country from Moorish rule gave a great impetus to Christian church building.

135. The Cathedral of Campostella is one of the earliest examples of Gothic church architecture in Spain. Commenced in 1078, its plan comprises all the essential elements of a French Gothic cathedral; but there is no clerestory and the transverse ribs of the barrel-vaulted roof rise from a string-course immediately above the arches of the triforium.

136. The *cimborio*, or dome, placed at the intersection of the nave and transepts, soon became an important element in early Spanish Gothic architecture. One of the most perfect examples of this crowning feature is to be seen in the old cathedral of Salamanca, dating from 1200. Here the pendentives of the dome, which is 28 feet in diameter, support two lofty stages of arcades, some of which are pierced for windows. Above is a ribbed semicircular dome. An outer stone roof, conical in form and flanked by four round turrets, forms a picturesque feature of the external design of the building, which is of a Romanesque type, although internally the pointed arch predominates.

137. Largest Mediaeval Church.—The Cathedral of Barcelona, commenced in 1298, is remarkable for the width given to the interspaces between the supports of the nave arcade and for the arrangement of the buttresses under which they become important features of the internal design. A rectangular outline, double aisles, and deep side chapels are among the peculiar features of the plan of Seville Cathedral which, built at the commencement of the fifteenth century on the site of a Moorish mosque, measuring 415 by 298 feet, is notable as being the largest mediaeval church in the world.

138. Moresco Style.—While the mediaeval architecture of North and Central Spain was mainly derived from French art, Moorish influence prevailed in the south, particularly in the neighbourhood of Toledo, where the so-called *Moresco style*, in which Gothic and Moorish details were curiously blended, was first developed. The church of St. Maria la Blanca, originally built for Moorish worship but afterwards appropriated by the Christians, is a good twelfth-century example of this debased style. Its plan, an irregular quadrangle about 90 feet long and 70 feet wide, was divided longitudinally into a narrow nave and double aisles by octagonal piers supporting arched arcades of horseshoe shape. Although the walling of the nave was carried up to a considerable height, there were no clerestory windows and light appears to have been admitted into the interior through the roof of the building. Other good examples of Moorish art adapted to Christian purposes are to be found in Spain.

ARCHITECTURAL EXAMPLES

CATHEDRALS AND CHURCHES

139. Toledo Cathedral.—The cathedral, Toledo, of which the plan is shown in Fig. 78, was commenced in 1227 and was therefore erected almost contemporaneously with the cathedrals at Amiens and Salisbury. Its general arrangement closely resembles that of the great church at Bourges, France, but owing to its greater width its area is much larger. The peculiar situation of the choir, which projects well into the body of the nave, is characteristic of Spanish churches.

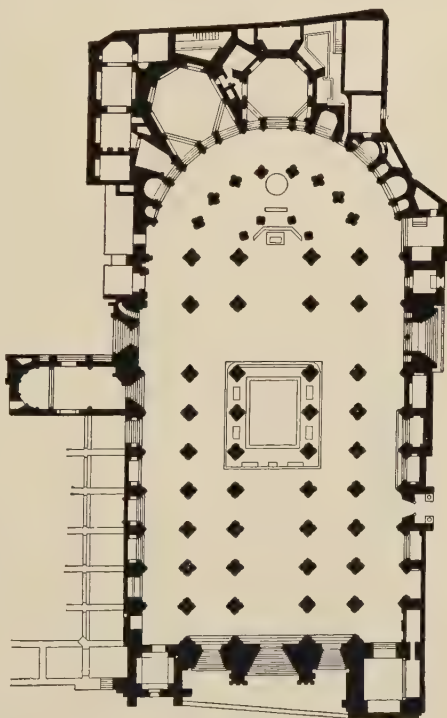


FIG. 78. PLAN OF TOLEDO CATHEDRAL

140. Burgos Cathedral.—French influence was paramount in Spain during the thirteenth century and the plan of Burgos Cathedral, a building belonging to that period, shown in Fig. 79, closely resembles the French type of church on which it was modelled. The internal effect of this early example of a purely Gothic church in Spain is marred by the massive appearance of the four supporting piers of the sumptuous dome of the cimborio, as shown in Fig. 80. But, on the other hand, the irregularity of form and richness of detail seen in the chevet and chapels of the east end

produce an extremely picturesque result. The west front of this cathedral, a florid example of late Gothic work, has two lofty open-traceried spires of German origin. This façade was added to the building, which dates from 1221, between the years 1442 and 1456; the cimborio is a still later addition.

141. Church of St. Maria del Pi, Barcelona.—Erected between the years 1329 to 1353, the plan of this church, Fig. 81, is clearly based on that of Alby.

Like its French prototype, it consists of an immense unbroken vaulted hall of which the supporting buttresses form the divisional walls of the side chapels.

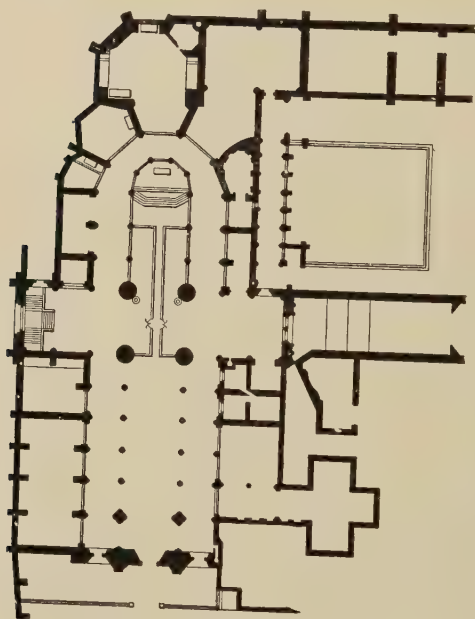


FIG. 79. PLAN OF BURGOS CATHEDRAL

142. Cathedral of St. Gregorio.—The tendency to over-decorate buildings characterized the latest period of Gothic art in all countries, but in Spain the absolute rejection of constructional or other guiding principles of ornamental art was more pronounced than

in any other part of Europe. Influenced by the style of ornamentation so long in vogue among the Moors, arches of fantastic shape, twisted columns carrying canopies for sculpture, and minute carvings and enrichments were introduced without restraint in the wall surfaces of the later Spanish Gothic buildings.

The disastrous effect of this extravagant application of Gothic ornament is apparent in the portal of the cathedral of St. Gregorio, illustrated in Fig. 82.



FIG. 80. INTERIOR OF BURGOS CATHEDRAL

143. Segovia Cathedral.—Commenced in 1523, when other countries were developing the architecture of the Renaissance, the cathedral at Segovia is therefore an exceptionally late example of the Gothic style. Its plan comprises a wide nave, aisles, and two ranges of chapels constructed between the

internal buttresses. The vaulted roofs are of an extremely rich and elaborate character. Externally, French influence is seen in the semicircular chevet and flying buttresses of the east end, but the detail of the building, as shown in Fig. 83, is extremely poor.



FIG. 81. PLAN OF
CHURCH OF ST. MARIA
DEL PI, BARCELONA

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

144. Plans.—The plans of many of the Spanish cathedrals were based on French models; consequently wide naves, side chapels, and semicircular chevets predominate. A peculiarity of Spanish church planning is seen in the position of the choir, which is almost universally situated to the west of the transepts and thus well within the body of the church. The buttresses, built to counteract the thrust of the vaulted roof, were often placed inside the boundary walls of the church and formed the divisional walls between the side chapels.

145. Walls.—Horizontal lines predominated in the walling, the surfaces of which were usually profusely enriched with florid ornamentation.

146. Roofs.—The vaulted roofs, often of great span, were rather bald and poor in effect during the early period of Spanish Gothic architecture, but later the ribs and intersections became very decorative in character.

147. Columns.—Piers, in which the vaulting shafts were incorporated, seem to have been preferred to columns for nave arcades.

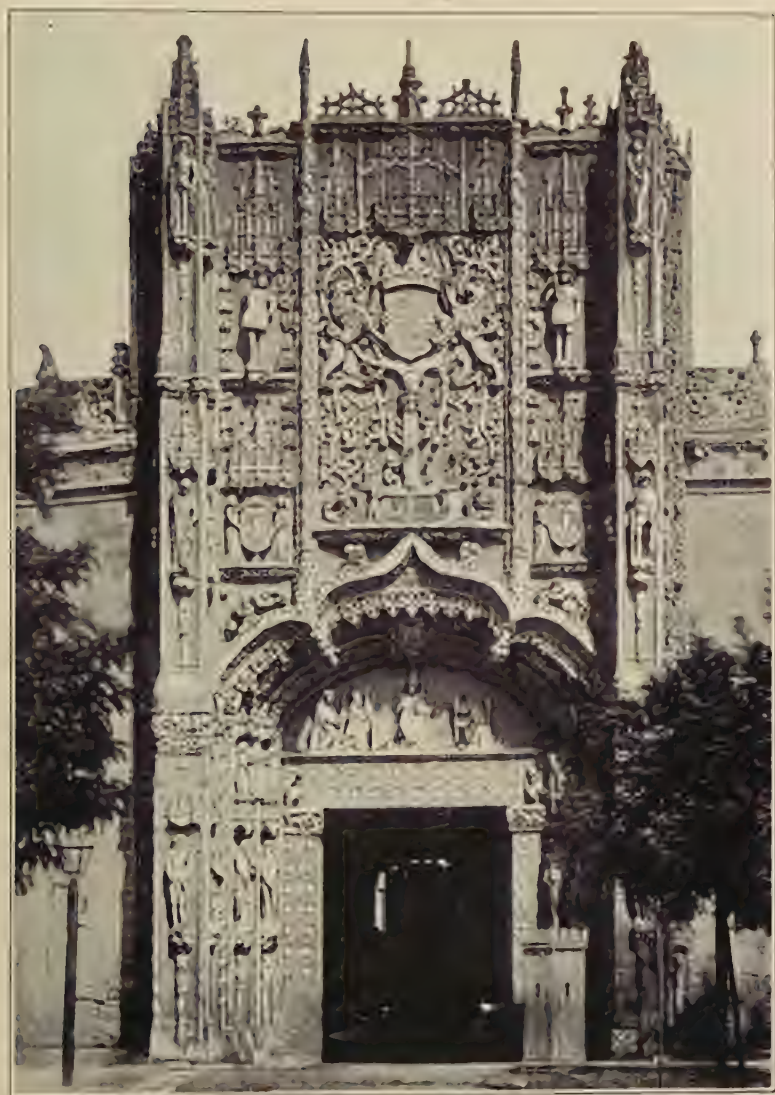


FIG. 82. PORTAL OF ST. GREGORIO CATHEDRAL



FIG. 83. SEGOVIA CATHEDRAL

148. Mouldings.—The mouldings used by the Gothic architects of Spain were usually rather free adaptations of French models.

149. Ornamentation.—In the earlier and best period of Spanish Gothic architecture the ornamentation, based on that of France, was quiet and restrained and, to a great extent, restricted to the interiors of buildings. But in the later Gothic buildings of the sixteenth century it became extraordinarily florid in its nature and was applied indiscriminately, both internally and externally, without restraint. In these later examples the details of the ornamentation show traces of the influence both of Moorish and early Renaissance art.

ENGLISH GOTHIC ARCHITECTURE

NOTES ON ENGLAND

HISTORICAL AND SOCIOLOGICAL

150. Formation of First Assembly.—By attempting to encroach on the liberties of his subjects, as defined by Magna Charta, Henry III, who reigned from 1216 to 1272, aroused the opposition of the nobles and chief land-owners and caused them to take up arms to protect their privileges. The struggle that ensued, known as the Barons' War, led to the formation of an assembly in which, in addition to the barons, the freeholders of the land were represented by two knights from each county and two citizens from each city or borough. This assembly afterwards developed into the English parliament.

151. Conquest of Wales and Independence of Scotland. Henry III was succeeded by his eldest son Edward I, whose ambition to rule over the whole of Great Britain led to a long war with Wales. The subjection of the latter country, in 1282, was followed by the invasion and partial conquest of Scotland. This Scottish war was continued by Edward II, who was defeated at Bannockburn in 1314, and 14 years later the independence of Scotland was acknowledged by England.

152. Wars of the Roses.—The Hundred Years' War with France was the chief event of the fourteenth and the first half of the fifteenth century. But, in 1455, a dispute arose between the Houses of York and Lancaster concerning the succession to the English throne. The representative of the former House claimed the crown, as the descendant of the third son of Edward III, while the Lancastrian's pretensions were based on his descent through the fourth son of that monarch. A civil war, known as the Wars of the Roses, ensued and lasted for 30 years, 1455 to 1485, during which three kings of the House of York occupied the throne. With the death, on Bosworth Field, of Richard III, the last Yorkist King, the Crown reverted in 1485 to Henry VII, the founder of the Tudor dynasty.

153. Downfall of Feudalism.—The main result of this civil war was the triumph of the royal power over that of the nobles. During the course of the struggle eighty princes of the blood and two hundred nobles are said to have fallen by the sword and many families of distinction were destroyed. The barons having thus lost their power, the succeeding kings were enabled to rule with almost supreme authority. In addition, the method of holding land was changed and the new relation of landlord and tenant superseded the old connection between lord and vassal. But while the battle of Bosworth thus marked the downfall of feudalism, former constitutional liberty disappeared with it and gave place to Tudor despotism.

ARCHITECTURAL PERIODS

EARLY ENGLISH, DECORATED, AND PERPENDICULAR PERIODS

154. Transitional Period.—The transition from Norman or Romanesque architecture to the first Pointed style, known as *Early English*, or *Lancet*, was very gradual, and it would be difficult to definitely classify many notable buildings to which the descriptive term *transitional* has therefore appropriately been given.

155. Duration of the Gothic Periods.—Early English, the first period of pointed art, succeeded Norman Romanesque toward the close of the twelfth and merged into the *Decorated*, or *Middle*, period, at the end of the thirteenth century. Throughout the



FIG. 84

greater part of the fourteenth century Decorated architecture prevailed, but it was overlapped for a considerable time by the last phase of Gothic art in England, known as *Perpendicular*, which, commencing about the middle of the fourteenth, lasted until the middle of the sixteenth century.

156. Lancet, Decorated, and Perpendicular Styles.—The term **Lancet**, often used to describe Early English art, has reference to the shape of the acutely pointed long and narrow arches that are so thoroughly characteristic of early Gothic art in England. Similarly, the architecture of the fourteenth century is called **Decorated** on account of the profusion of ornamentation then applied to the enrichment of buildings. The term **Perpendicular**, used to denote the third and last phase of English Gothic architecture, is derived from a peculiar arrangement of the window tracery and ornamentation of the period in which perpendicular lines predominated. The geographical positions of the prominent ecclesiastical buildings in England and Wales are indicated on the map of England, Fig. 84.

157. Contemporaneous French and English Gothic.—Some idea of the individual characteristics of the early Gothic buildings in France and England may be gained by comparing the plan and architectural details of the cathedral at Amiens, Fig. 16, with the almost contemporaneous great church at Salisbury, Fig. 96. In these examples the numerous characteristics of style developed in each country are clearly marked. These national peculiarities are also exemplified in many of the architectural details of the two buildings, particularly in the square abacus of the capitals and in the fully developed window tracery of the French building in contradistinction to the round abacus and lancet windows, used simply or in groups, of the English cathedral.

158. Other important differences in the early Gothic art of the two countries are found in the lengthened choir of the English church of the period which, as at Peterborough and Norwich, was usually finished with a square east end instead of with the circular or polygonal form common in France. In addition, the great central tower remained a feature of English cathedrals long after its use was abandoned in France, and while vaulting was almost universal in large or small French churches, in England its use was usually restricted to cathedrals.

159. Introduction of Window Tracery.—The introduction of window tracery into England dates from the latter part of the

thirteenth century. It grew naturally from the geometrical figure formed at the head of a window containing two or more narrow openings grouped under one arch, and windows filled in with tracery composed of simple geometrical forms became characteristic features of the Middle, or Geometrical, period of English Gothic architecture.

160. Main Features of the Perpendicular Style.—Late Gothic or Perpendicular work in England was, approximately, contemporaneous with the French Flamboyant style. Although there is considerable difference in the details of buildings erected during the early and late periods of Perpendicular art, yet the main feature of the style, namely, the prominence given to the vertical lines of the windows and wall panels, remained the same throughout the whole period during which the Perpendicular style was prevalent in this country.

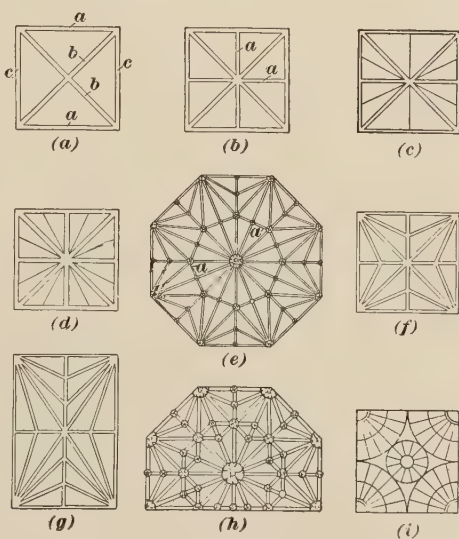


FIG. 85

161. Vaulting.—Early English vaulting in its simplest form, as shown in Fig. 85 (a), consists of *wall ribs a*, *diagonal or groin ribs b*, and *transverse springers, or ribs, c*, crossing the vault at right angles. In later examples of Early English Gothic vaulting, *ridge ribs or mouldings* placed at the apex, as shown at *a* in Fig. 85 (b), are also formed. The rib mouldings, consisting mainly of rounds and hollows, are often relieved with toothed and leaf ornamentation and the intersections with well-carved bosses worked in the form of gracefully arranged masses of the conventional foliage characteristic of early English floral decoration.

162. As the arches of church arcades were frequently arranged in pairs with piers alternating in size and design, and each pair of arches formed a square in plan, there was a natural tendency to arrange the vaulting compartments in single squares. But as this method of setting out left the alternate piers unrepresented in the vaulting, it afterwards became customary to carry a single transverse rib from the intermediate pier crossing the diagonals

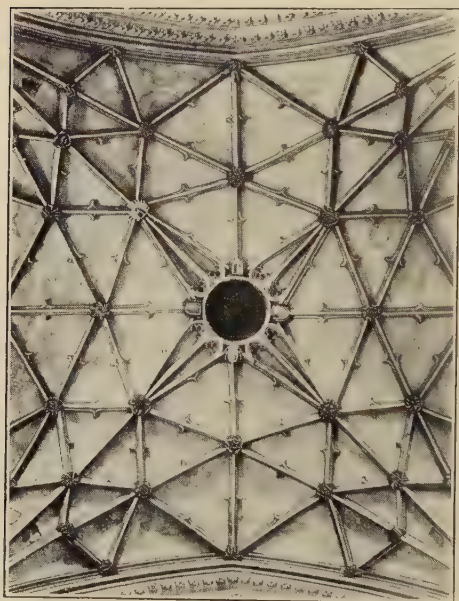


FIG. 86

at their point of intersection and between it and the diagonals to form oblique vaulting cells the ridges of which ran from the centres of the half bays to the point of intersection, Fig. 85 (c). This arrangement, known as *sexpartite vaulting*, divided each bay of vaulting into six instead of into the ordinary four-celled, or *quadripartite*, form. An extension of this arrangement of vaulting when applied to a square building, with two bays on each of

its sides, formed the *octopartite*, or eight-celled vault, seen in Fig. 85 (d).

163. Large vaulting compartments, as in the chapter house at York, Fig. 85 (e), had the central portion of the ceiling bounded by a strongly marked horizontal line, formed by what are known as *lierne ribs*, defining the boundary of the half-vaults below and the dome-like finish of the upper portion.

In addition to ridge ribs and those used for special utilitarian purposes, such as transverse ribs that marked the boundaries of



FIG. 87. CENTRAL COLUMN OF CHAPTER HOUSE, WELLS CATHEDRAL

the bays, diagonal ribs that strengthened the angles of intersection, and wall ribs that formed the supports of the vaults at their junction with the walls, other ribs were often introduced in square and oblong vaulting, as shown at (f) and (g), Fig. 85. The elaborate nature of later vaults may be seen on reference to Fig. 85 (h), which is a plan of the vaulted ceiling of the oriel window at Crosby Hall, London. At (i) is shown the latest development of English Gothic vaulting, known as *fan vaulting*. From this example it will be seen that the vaulting of any space, if set out in square compartments with ribs of similar curvature spaced at equal distances apart, may be formed into a number of portions of concave-sided conoids or conical figures by merely drawing semi-circles and quadrants, as the case may be, from apex to apex of the surrounding arches, as shown by the dotted lines in Fig. 85 (i).

164. Vaults of the early Decorated period do not differ materially from those of the preceding style, but in the later buildings there is a general increase in the number of intermediate ribs that appear on the surface of the vaulting in the form of stars and other figures and add to the richness and variety of the general design, as seen in the

example, Fig. 86, and short liernes, connecting the bosses and intersections of the principal ribs, are common features of Decorated vaults.

165. In general construction and design the vaults of the early Perpendicular period are similar to those of the Decorated style, but the ribs are less elaborately moulded and, in section, often present the appearance of a plain mullion comprising a fillet and two hollows. The vaulting ribs are arranged in a variety of ways and their upper parts **feathered**, or **cusped**, to resemble

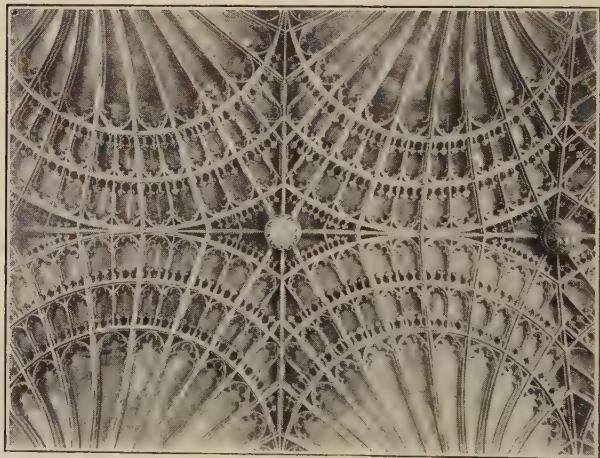


FIG. 88. VAULTING IN RETROCHOIR, PETERBOROUGH CATHEDRAL

window tracery. In the vaults of the later period the ribs are increased in number, as seen in Fig. 87, until the whole surface of the ceiling is enveloped with a kind of network of which the roof of the choir at Gloucester Cathedral is one of the most elaborate examples.

166. Fan vaulting made its appearance toward the end of the Perpendicular period, and one of its earliest and best examples is to be seen in the cloisters of Gloucester Cathedral. In these vaults there are no groins, but a small cluster of ribs springing from the top of the vaulting shaft and doubling out from the points of the panels ramifies on to the ceiling in the form of a semicircular fan, or *pendentive*. The lozenge-shaped space



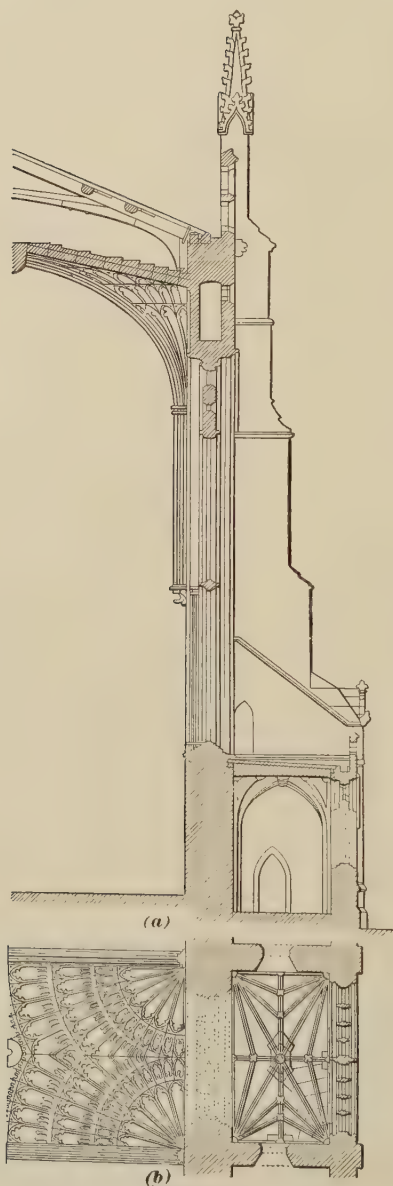


FIG. 90. TRANSVERSE SECTION AND PLAN OF
KING'S COLLEGE CHAPEL, CAMBRIDGE

between the fans is filled in with ornaments, as seen in Figs. 88 and 89, consisting, in some instances, of *pendants* or inverted moulded and enriched terminals.

167. The ceiling of King's College Chapel, Cambridge, illustrated in Fig. 90, is an excellent example of the application of the fan vault. Upwards of 289 feet in length, 44 feet in width, and 81 feet in height, the vaulted surface of the body of the chapel is divided into twelve rectangles, the width of each being half its length. Fig. 90 (a) is a transverse section of the building taken through the centre of one bay. A plan of one of the vaulting compartments, including the supporting piers, with the ribs and tracery of the vault, is shown in Fig. 90 (b).

168. Among the more important vaulted ceilings constructed in England between the fourteenth and sixteenth centuries are those given in the following table, in which the date of construction and the approximate length, width and height of each vault is indicated.

TABLE I
EXAMPLES OF VAULTED CEILINGS

Name of Structure	Year of Erection	Length Feet	Breadth Feet	Height Feet
Choir, Lincoln Cathedral . .	1306	200	40	82
Chapel of Our Lady, Ely . . .	1349	100	46	
Choir, Gloucester Cathedral .	1360	140	34	86
Choir, York Cathedral . . .	1373	135	45	
St. George's Chapel, Windsor	1508	260	65	52
King's College Chapel, Cambridge	1516	289	44½	81
Christ Church Chapel, Oxford	1535	80		

169. Timber Roofs.—The vaulted ceilings of the cathedrals were protected externally by timber roofs of varying forms of construction designed to receive a covering of lead slates or tiles. But for the parish churches, in which vaulted ceilings were seldom found, open timber roofs of beautiful design and elaborate construction were in great request. These church roofs became a special feature of English mediaeval art, and were important elements of the internal design of the structures to which they were applied.

170. In most cases the main weight-bearing portions of the roof, known as the trusses or principals, were placed at regular intervals on the longitudinal walls. Fig. 91 (*a*) illustrates the component parts of a hammer-beam roof which contains most of the peculiarities of construction that distinguish mediaeval from modern roofs. In this illustration *a* is the hammer beam, or horizontal piece of timber projecting from the wall, into which the principal rafter *b*, and the wall piece and side posts *c* and *d*, are tenoned; *e*, the hammer-beam brace, is a curved piece of timber that binds the hammer beam and wall piece together; *g* is the collar brace, and *f* and *h* are beams, known as collars, inserted to prevent the outward spread of the rafters *b*. The

common, or outer, rafters *i*, framed into the ridge *k* and into the wall plate, are supported by longitudinal pieces of timber, or purlins *j*, extending from truss to truss. Sometimes one hammer beam is, as it were, repeated in successive stages one over another, as in the roof of the Middle Temple Hall, London, Fig. 91 (*b*).

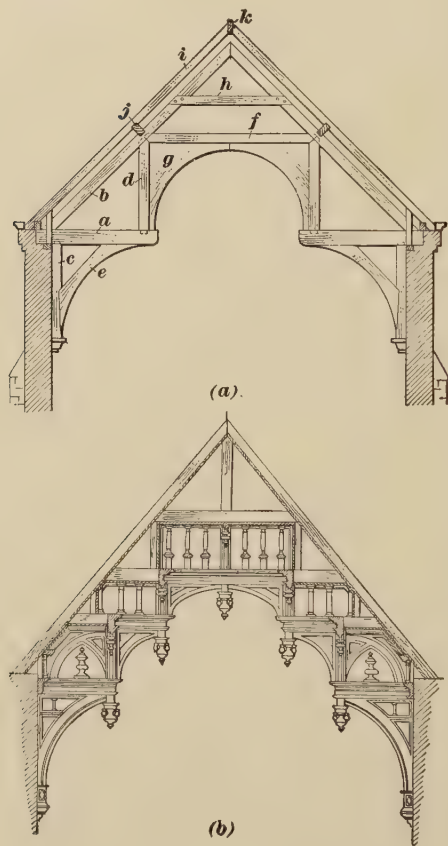


FIG. 91

171. Open timber roofs may be classified under the following descriptive heads, namely, (*a*) those with tie-beams or horizontal pieces of timber extending from wall to wall into which the ends of the principal rafters are framed; (*b*) trussed-rafter or single-framed roofs; (*c*) hammer-beam roofs; and (*d*) roofs constructed with collars and braces. The massive tie-beams of the roofs included in group (*a*) were almost invariably *cambered*, that is, made deeper in the middle than at the ends, as shown in Fig. 92 (*a*), in order to avoid the unattractive appearance of a perfectly

horizontal line, and, with the same object, curved braces were often framed into the under side of the tie-beam to connect it with wall pieces and thus form a kind of arched support. Neither tie-beams nor purlins were used in trussed-rafter roofs, Fig. 92 (*b*), but each pair of rafters, as in the illustration, was strengthened by short horizontal beams or collars, stiffened by pieces of timber,

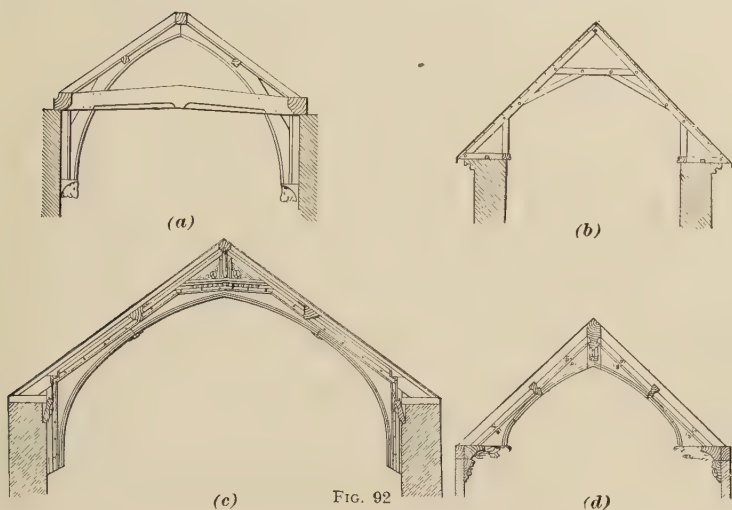


FIG. 92

known as braces, fixed obliquely from one rafter to its opposite neighbour. In roofs of this description the rafters usually extended to the outside face of the walls to form the eaves, and vertical struts, as in Fig. 92 (b), were carried up internally from the level of the wall piece to the under side of the rafters.

172. One of the earliest, but best, examples of a hammer-beam roof is that over Westminster Hall, which is said to date from 1399, although roofs of this description were not in general use until late in the fifteenth century.

Fig. 92 (c) illustrates an example of a collar-braced roof. The curved braces used in this and other roofs of somewhat similar form, as in the example given in Fig. 92 (d), not only serve to bind the various timbers together, but help to distribute the thrust of the roof on the lower portion of the walls.

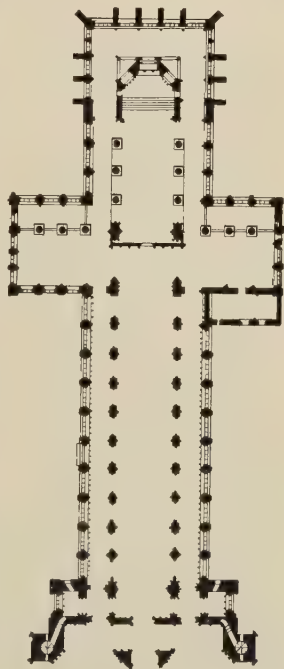


FIG. 93.

PLAN OF PETERBOROUGH CATHEDRAL



FIG. 94. INTERIOR OF SALISBURY CATHEDRAL

ARCHITECTURAL EXAMPLES

ECCLESIASTICAL BUILDINGS

173. Peterborough Cathedral.—Norman architecture is well represented in the nave and aisles of Peterborough Cathedral, but the west front, with its lofty arches 81 feet in height, was

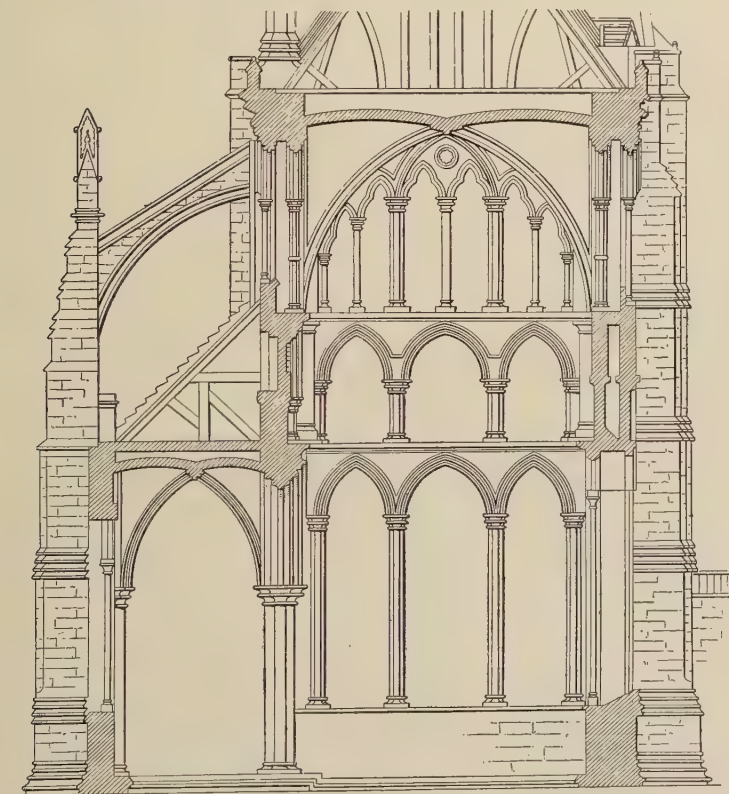


FIG. 95. TRANSVERSE SECTION OF SALISBURY CATHEDRAL

not built until 1237, while the retrochoir, Fig. 89, dates from 1500. The plan of this cathedral is shown in Fig. 93. The internal arrangement is uncommon, as the nave arches, the

triforium, and the clerestory form three stages of nearly equal height and importance. The aisles of this building are vaulted, but the nave has a boarded ceiling relieved with coloured decoration.

174. Salisbury Cathedral.—Remarkable as the only example

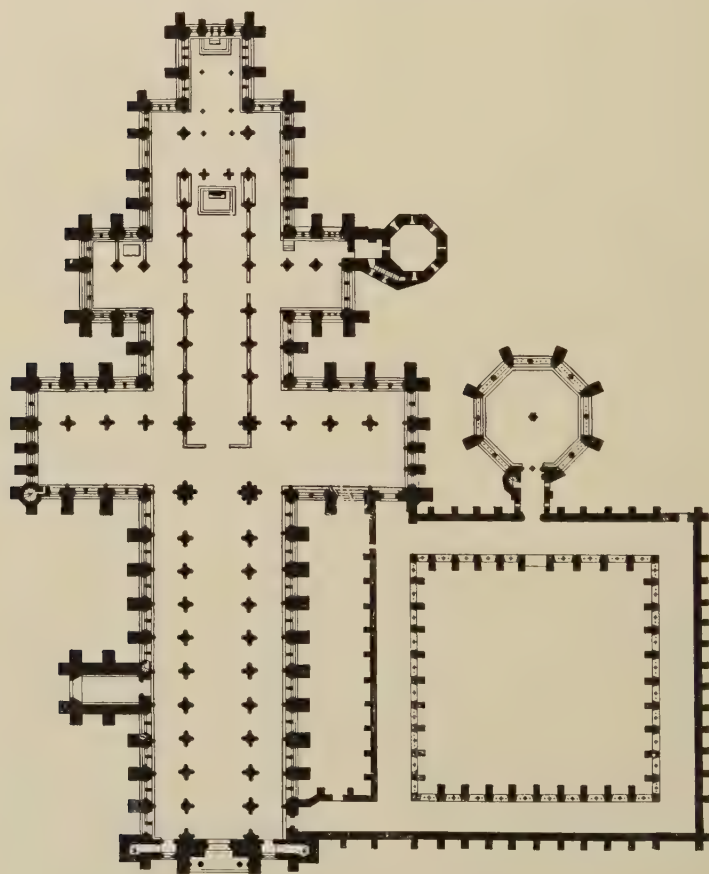


FIG. 93. PLAN OF SALISBURY CATHEDRAL

of an ancient cathedral belonging entirely to one period of English Gothic art, the purity of the Early English detail of Salisbury Cathedral is seen in the interior view of the nave, Fig. 94. The general proportions of this beautiful example of Early Pointed

architecture are shown by the transverse section through the vaulted nave and aisles, Fig. 95. Of cruciform shape and planned with two sets of transepts, Fig. 96, the total length of the cathedral is 473 feet and its breadth, across the west transepts, 230 feet. The extreme height of the richly adorned central tower and spire is 406 feet.

175. Lichfield Cathedral.—Situated in a small but picturesque enclosure, or *close*, and dedicated to St. Chad, the patron saint of the city, this well-known example of Decorated Gothic architecture dates mainly from the thirteenth and fourteenth centuries. The lower part of the west half of the choir, erected about 1200, is the oldest part of the church. The transepts were built between 1220 and 1240, the nave about the year 1250, the west front in 1280, and the Lady Chapel at the beginning of the fourteenth century. Although surpassed by other cathedrals in size and elaboration, yet in its symmetry and proportions Lichfield Cathedral is almost unrivalled.

Externally, the three spires and beautiful western façade unite in forming a very pleasing architectural composition. The general proportions of Lichfield Cathedral are illustrated by the transverse section, Fig. 97, its internal aspect by Fig. 98, and its plan by Fig. 99.

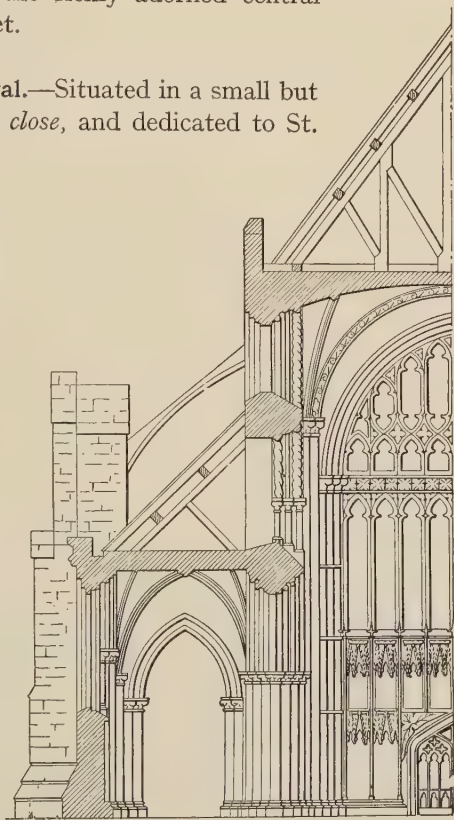


FIG. 97.

TRANSVERSE SECTION OF LICHFIELD CATHEDRAL



FIG. 98. INTERIOR OF LICHFIELD CATHEDRAL

176. Winchester Cathedral.—Originally a Norman building, Winchester Cathedral now includes every phase of English Pointed architecture. The change in the architecture of the original building from Norman to a later period of mediaeval architecture, chiefly Perpendicular, was due to William of Wykeham, Bishop of Winchester, who, renowned as an architect, ecclesiastic, and statesman, occupied the see between 1366 and 1404 and was responsible for the curious architectural transformation that has taken place in the building since it was

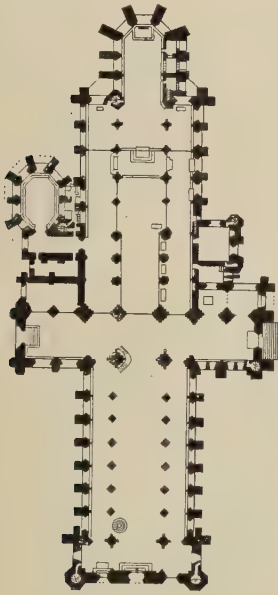


FIG. 99. PLAN OF LICHFIELD CATHEDRAL

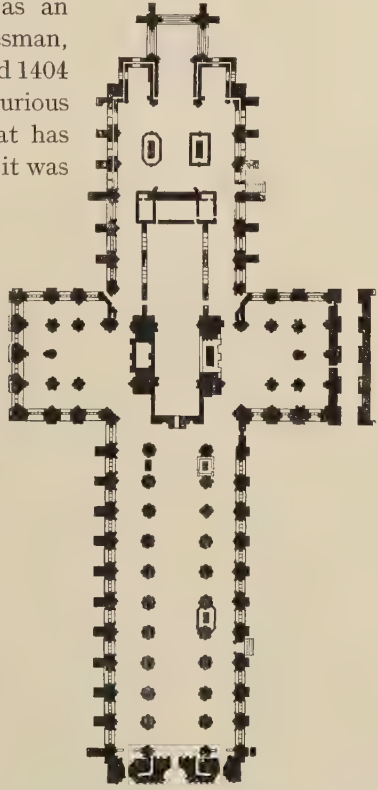


FIG. 100. PLAN OF WINCHESTER CATHEDRAL

first erected. The general proportions of the cathedral, which has an extreme length of 560 and a breadth of 230 feet, are shown by the plan, Fig. 100, and by Fig. 101, which includes a transverse section (*a*), and internal and external elevations (*b*) and (*c*).

177. Canterbury Cathedral.—The present cathedral of Canterbury was the third church to be built on the same site ; the first

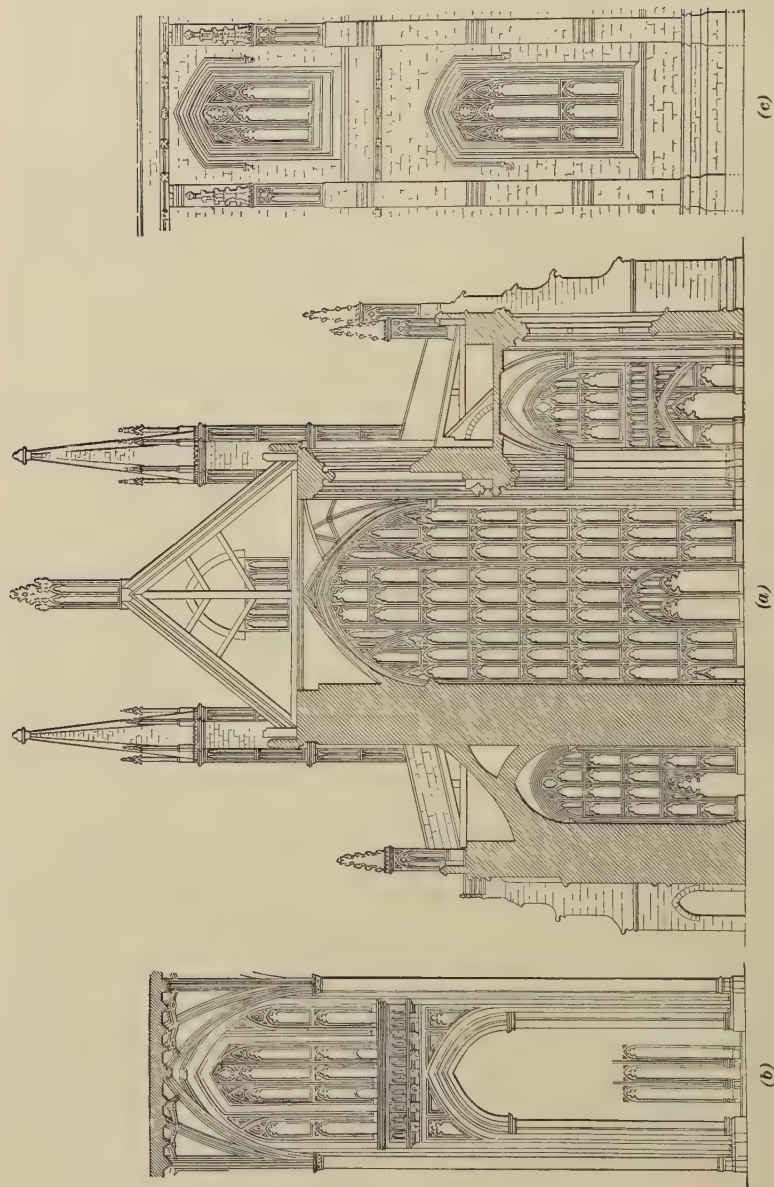


FIG. 101. TRANSVERSE SECTION AND INTERNAL AND EXTERNAL ELEVATIONS OF WINCHESTER CATHEDRAL



FIG. 102. CANTERBURY CATHEDRAL

structure, founded by ancient Roman Christians, was presented



FIG. 103. PLAN OF CANTERBURY CATHEDRAL

to St. Augustine and became part of a monastic foundation. This building seems to have entirely disappeared at the time of the Norman Conquest, when the first Norman Archbishop, Lanfranc, commenced the erection of the second cathedral, which, continued by his successor, was completed in 1130. The choir of this Norman church was destroyed by fire in 1174, when the present choir, in the transitional style, was built by William of Sens. Two hundred years later the old Norman nave and transepts were replaced by the present Perpendicular building, an exterior view of which is shown in Fig. 102. The great central tower was added in 1495. A peculiarity

of this cathedral is the elevated choir, the level of which is several feet above that of the nave. Canterbury Cathedral is illustrated in plan in Fig. 103.

178. Ely Cathedral.—The Cathedral of Ely occupies the site of an ancient abbey founded by St. Etheldreda in 673. Commenced in the year 1083, the present building was completed, in its original form, in 1109. A portion of the nave was added about 1180 and the *galilee*, or large western porch, early in the thirteenth century. The octagon at the crossing, a beautiful and unique feature of the building, was constructed to take the place of the central tower destroyed in 1322. Ely Cathedral, as seen from the west, is shown in Fig. 104, and its plan in Fig. 105. It is about 520 feet long and its nave 62 feet high.



FIG. 104. ELY CATHEDRAL

179. York Minster.—York Minster, one of the largest of the English cathedrals, is illustrated in plan in Fig. 106. The earliest church, a small wooden one, built on the site of the present building, was replaced by a stone basilica that was destroyed in the eighth century. Its successor, the third church, was burnt down in 1069, when the fourth structure, founded by the first

Norman bishop, was commenced. This church has since been almost wholly rebuilt. The present choir dates from the twelfth century and the north and south transepts from the thirteenth century, while the original Norman nave was replaced by the present one between 1290 and 1345; the towers were built in the fifteenth century. Thus, in its present form York Minster possesses excellent examples of the Early English, Decorated, and Perpendicular styles of Gothic architecture.

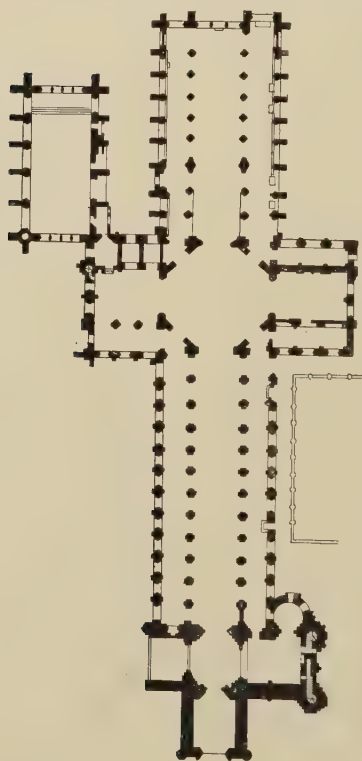


FIG 105. PLAN OF ELY CATHEDRAL

180. Wells Cathedral.

Erected in the first half of the thirteenth century, and completed, by the addition of the octagonal chapter house, before the commencement of the fourteenth century, the east part of the church, more particularly the

Presbytery and Lady Chapel, appears to have been completely transformed between the years 1320 and 1350. The upper portion of the central tower, 165 feet high, dates from the early part of the fourteenth century, and the west towers and cloisters belong to the Perpendicular period. Fig. 107 shows the west front, Fig. 108 the plan, and Fig. 87 the central column of the chapter house.

181. Westminster Abbey.—Founded as a monastic building in the tenth century, Westminster Abbey was rebuilt in the Norman style by Edward the Confessor. Commenced by Henry III in 1245, the present abbey church of Westminster was completed in 1269. While the nave and transepts of the church are of English origin, the choir, as seen from the plan shown in Fig. 109, is clearly an adaptation of a French design. Henry VII's chapel, dating from 1520, replaced the lady chapel of the original building. Much of the western front, including the two towers added by Sir Christopher Wren and Hawksmoor in 1722 to 1740, shown in Fig. 110, is comparatively modern.

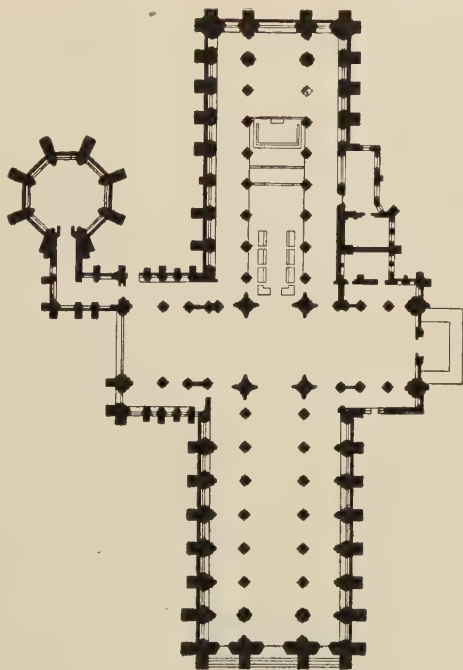


FIG. 106. PLAN OF YORK MINSTER

DETAILS OF BUILDINGS

PLANS, WALLS, ARCADES, AND ORNAMENTATION OF CATHEDRALS

182. Plans.—The general arrangement of an English cathedral was well established by the beginning of the twelfth century, but the original plan of ecclesiastical buildings, dating from Norman times, has often been more or less transformed by subsequent alterations and extensions. Many of the principal features of

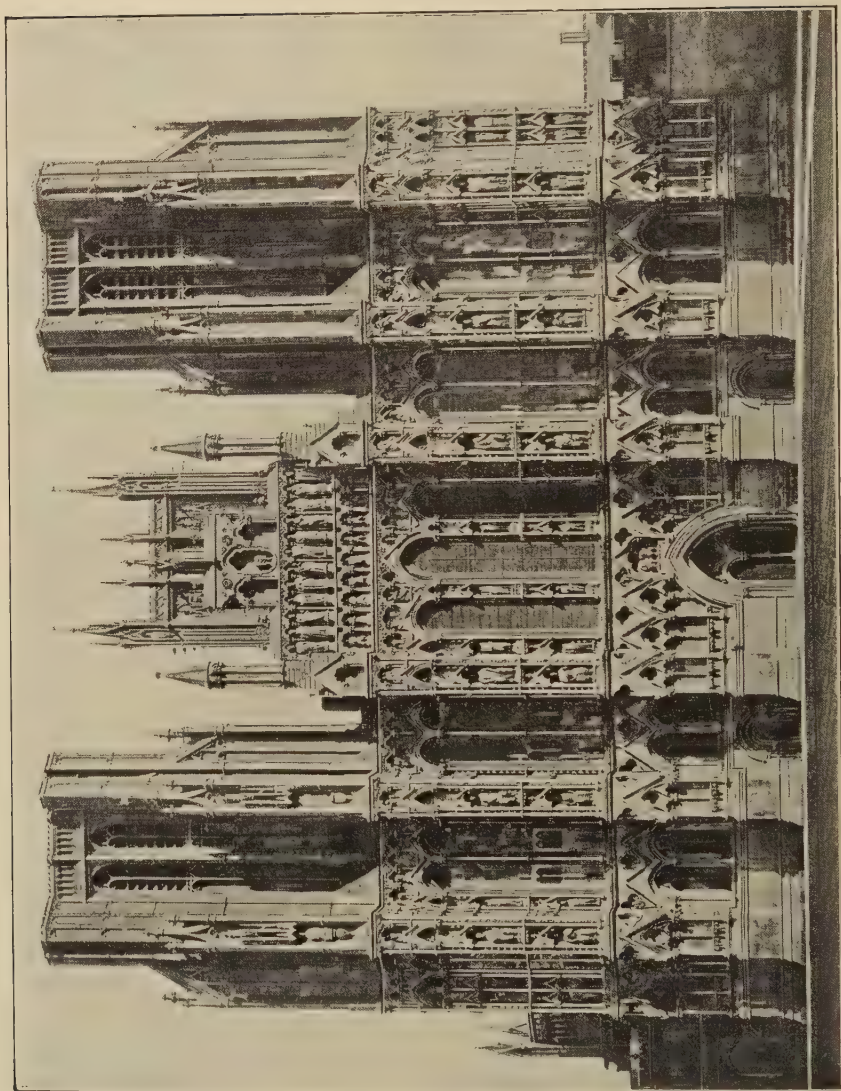


FIG. 107. WELLS CATHEDRAL.

the large Norman church, such as the long nave and aisles terminating in the semicircular eastern choir and the north and south transepts forming the arms of the cruciform plan, are found in the cathedrals of Norwich, Canterbury, Peterborough, and in other examples of Norman ecclesiastical architecture.

183. When, in the thirteenth century, the round arch gave place to the pointed, all features acquired grace and slenderness. The massive square or circular pillars of the nave arcading were superseded by groups of light clustered columns, and pointed vaults took the place of barrel vaulting and flat ceilings. Alterations were also made in the general plan of the building by which the eastern arm of the cross was considerably extended. Secondary transepts, as at Salisbury Cathedral, Fig. 96, were sometimes built to the eastward of the main crossing and the semicircular end, or apse, with which the Normans terminated the eastern arm of the cross, was abandoned in favour of a flat east end.

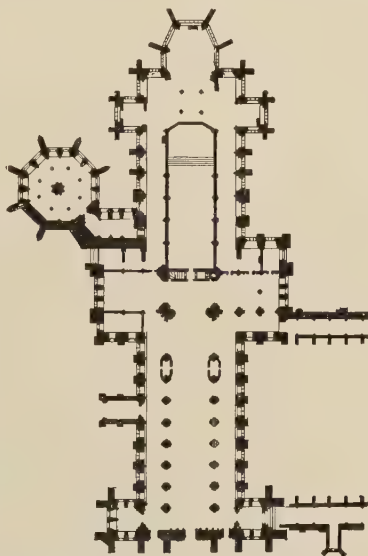


FIG. 108. PLAN OF WELLS CATHEDRAL

In addition to the longitudinal extension of the choir, spacious chapels, known as *lady chapels*, sometimes considerably changed the aspect of the old Norman plan. Occasionally of the same height and width as the choir itself, the lady chapel more often presented the appearance of a low subordinate building placed at the end or on one side of the choir.

184. Walls.—Although of great thickness, the stone walls of English Gothic buildings were not remarkable for sound constructional qualities, as the dressed facings were seldom properly bonded into the rough masonry that formed the core of the walling. Developed from the slightly projecting Norman piers,

and specially designed to strengthen portions of walling subject to the thrust and weight of stone vaulting, buttresses became distinguishing features in each of the three periods of Gothic art.

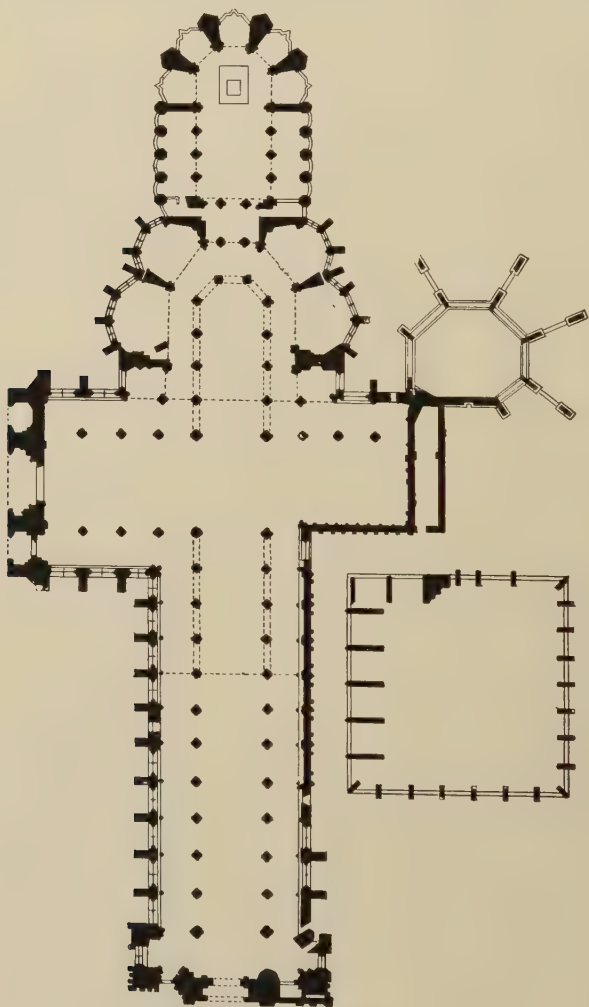


FIG. 109. PLAN OF WESTMINSTER ABBEY

185. The end wall of a building generally terminated in a gable conforming to the outline of the roof abutting against it



FIG. 110. WESTMINSTER ABBEY

and regulated by its size. In the Early English period the angle of the apex of the gable was usually that of an equilateral triangle. The gables of Decorated and Perpendicular buildings were sometimes high and sometimes low, although the low flattened gable is usually regarded as a special characteristic of Perpendicular buildings.

186. Toward the end of the fifteenth century bricks began to be used extensively for walling, more especially in the eastern counties, and in Norfolk, and parts of Sussex, walls faced with flints and relieved with stone dressings became common. Half-timbered houses, in which the spaces between the timbers are finished in plaster, were erected at this and subsequent periods, in all parts of England.

187. Buttresses.—At the commencement of the Early English period the flat Norman buttress continued to be used until it was superseded by one the projection of which was about equal to its breadth. Early English buttresses, Fig. 111 (*a*), were sometimes continued throughout their whole height without any diminution in sectional area, but, more frequently, they were broken into stages in which their projection and sometimes their widths were reduced. The *sets-off*, or small inclined surfaces dividing the stages of the buttress, were generally sloped at an acute angle and the buttress usually terminated either with a plain slope or with a triangular head. Although flying buttresses were used in England in the first Pointed period, yet they did not become common until the Decorated style had set in. Decorated buttresses, shown in front and side elevation in Fig. 111 (*b*) and (*c*), of which there were many varieties, were nearly always built in stages, adorned with moulded sets-off, gabled heads, and niches for sculpture. Decorated buttresses often terminated in pinnacles. It was during this period that corner buttresses began to be set diagonally with the walls.

Perpendicular buttresses, although usually higher and of greater projection than those of the preceding style, were not often divided into more than two stages. Most of the larger Perpendicular churches had buttresses richly ornamented with tracery and panelling, or with canopies, as seen from the buttress

shown in side and front elevation in Fig. 111 (*d*) and (*e*). The

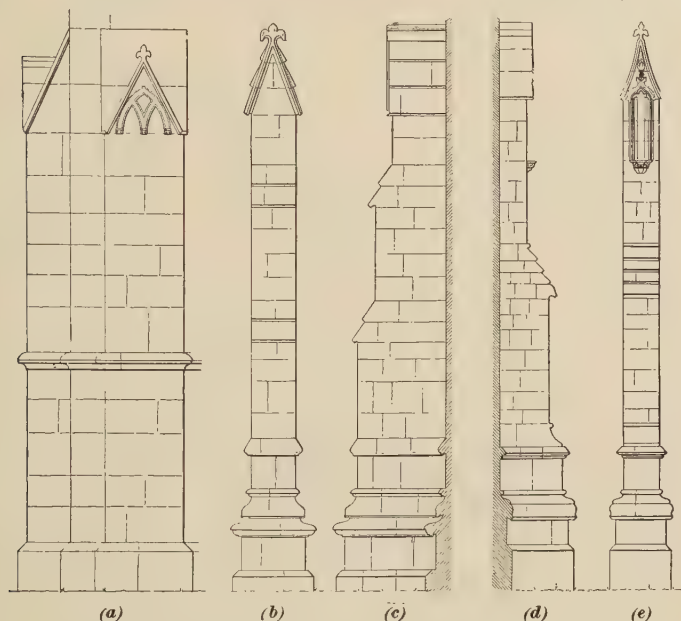


FIG. 111

upper stages of Perpendicular buttresses were often constructed with diagonal faces.

188. Arcades.—Early English piers consisted of groups of detached shafts clustered round a main column, as in Fig. 112 (*a*) and (*b*), sometimes bound together by bands of masonry. The

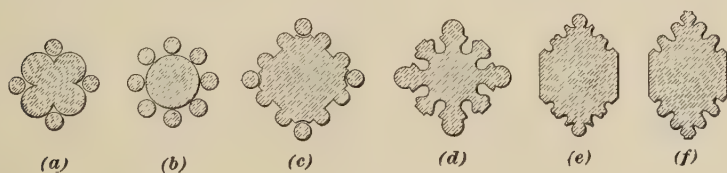


FIG. 112

lancet-shaped arches, ornamented with deep hollow mouldings, were sometimes enriched with toothed and other ornamentation, but more often were left plain, as in the chancel arch of Preston Church, Sussex, shown in Fig. 113 (*a*).

189. Decorated piers usually took the form of groups of shafts arranged on a lozenge-shaped plan, as seen in Fig. 112 (c).

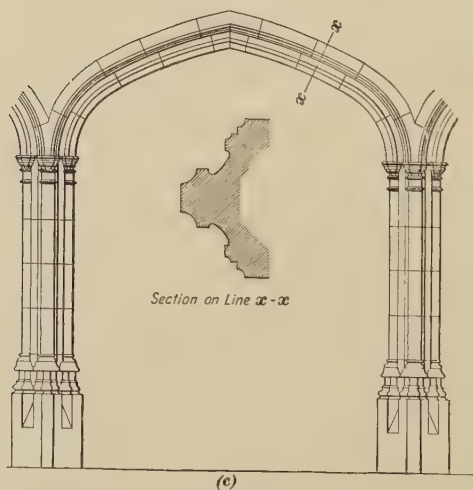
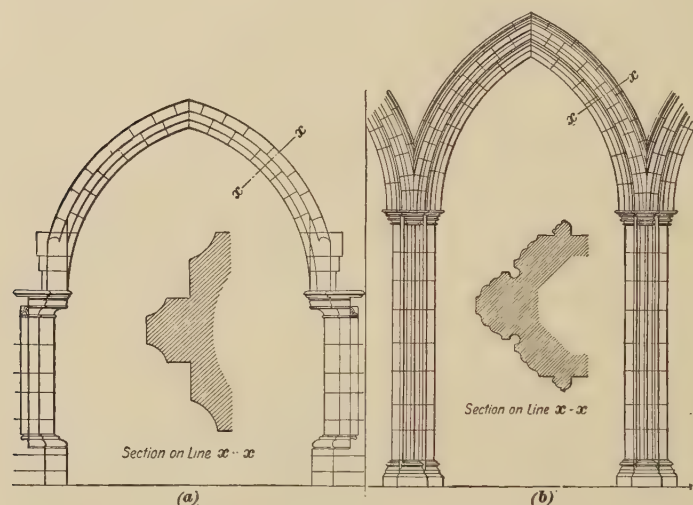


FIG. 113

Another variety was composed of four partially engaged shafts, sometimes filleted and separated from each other by hollow mouldings, as in Fig. 112 (d). The equilateral arch seen in Fig. 113 (b) was specially characteristic of the Decorated style, but the *drop arch*, which has a radius shorter than the width of the opening, and the *ogee arch*, which had two of its four

centres in the springing line and two in a parallel line above it and reversed, were also frequently used.

190. While retaining the general form, piers of the Perpendicular period, Fig. 112 (*e*) and (*f*), were much thinner on face than those of the Decorated style. But, on the other hand, their side measurements were often increased by the addition of shafts carrying the groins of the roof vaulting that were thus continued down the face of the nave piers. Small octagonal piers were also used. Arches of all forms are found in Perpendicular work, although the four-centred arch seen in Fig. 113 (*c*) is probably the most common. One of the chief features of this style is the arrangement under which the mouldings are often continued round the arch from the base upwards without a horizontal stop.

191. Capitals.—The three component parts of the Early English capital, known as the abacus, cap, and necking, are not

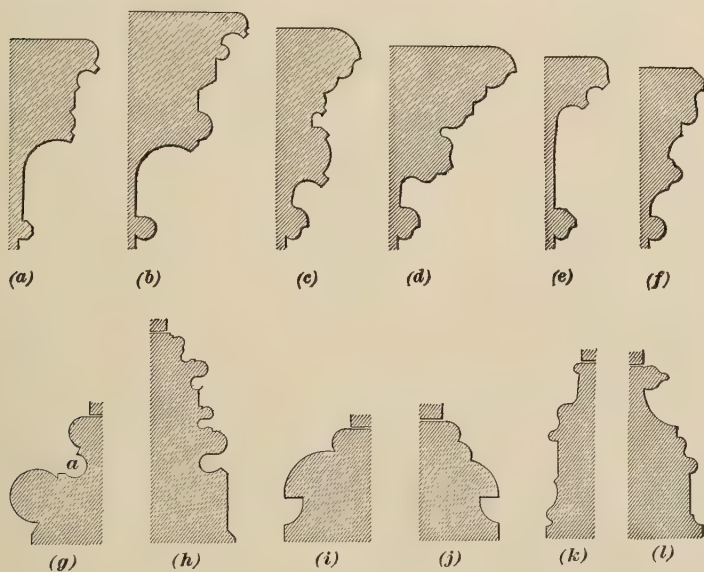


FIG. 114

very clearly defined. Frequently devoid of carving and consisting of deeply undercut mouldings, there is usually a plain bell-shaped space between the top mouldings and the necking, as shown in the two sections of Early English capitals illustrated at (*a*) and (*b*), Fig. 114. Examples of plain Early English capitals

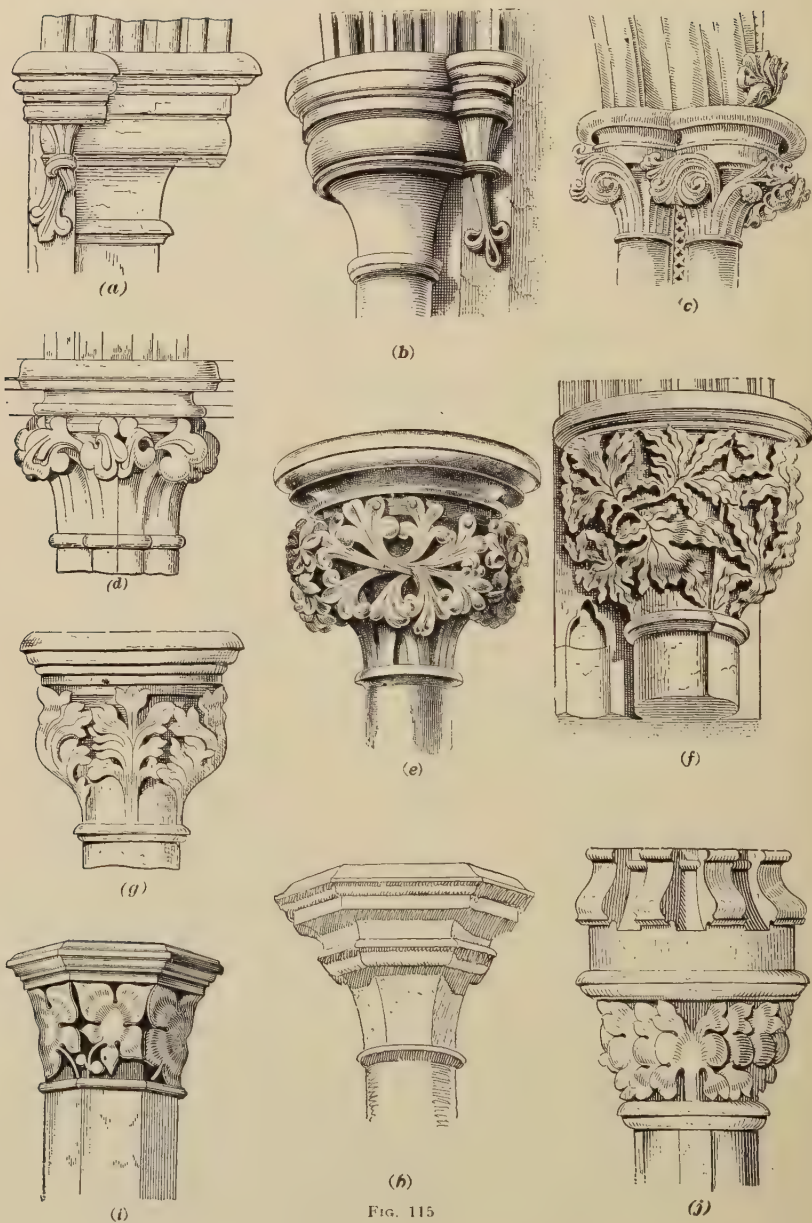


FIG. 115

are shown in Fig. 115 (*a*) and (*b*), but when adorned with carving the bell of the capital was worked with boldly undercut leaves, as in (*c*), (*d*), and (*e*), with the result that a highly decorative and graceful effect was obtained. The mouldings of Decorated capitals, consisting chiefly of rounds, ogees, and hollows, are less undercut, as seen from the sections, Fig. 114 (*c*) and (*d*), and the foliage is not so conventional in treatment. Indeed, much of the generally well-arranged carving represented the leaves of particular plants and trees, such as the oak, ivy, vine, etc. Carved Decorated caps are shown in Fig. 115 (*f*) and (*g*). Perpendicular capitals, sections of which are given in Fig. 114 (*e*) and (*f*), are usually plain, as in Fig. 115 (*h*), although they are occasionally enriched with shallow foliage, Fig. 115 (*i*) and (*j*). Early in the period when circular shafts were used the necking only, or the necking, the ball, and the first moulding above it, followed the same form, but the upper moulding was often changed into an octagon. The foliage of the Perpendicular style was stiffer and less natural in its treatment than that of the preceding period.

192. Bases.—At the commencement of the Early English style the bases of the columns, which were very similar in contour to the classic or attic bases, included a square single or double plinth. Thus, at first these bases, which had leaves springing from the mouldings to cover the angles left by the seating of the circular shaft on the square plinth, were similar in design to Norman bases, as in Fig. 114 (*g*). But, at a later period, the plinth took the same form as the mouldings and was often made so high as to present the appearance of a pedestal, as seen in Fig. 114 (*h*).

193. During the Decorated period the base became less bold in treatment. All likeness to the attic base disappeared with the absence of the deeply cut water-holding hollow *a* of the base of the preceding period, shown in Fig. 114 (*g*), and base contours began to be formed of a succession of rolls, the scroll moulding and the roll and fillet, as seen in (*i*) and (*j*). Although varied in form, Decorated bases had seldom many members, and both plinth and mouldings were usually worked in conformity with the shape of the shaft. But, occasionally, the plinths were

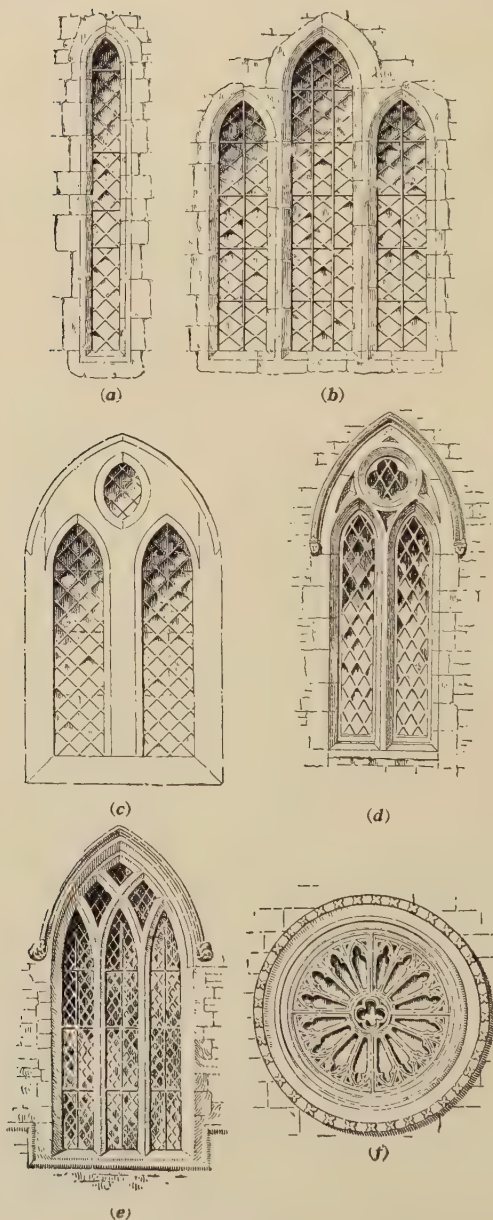


FIG. 116

octagonal in plan, while the mouldings retained the circular form of the shaft. Perpendicular bases are characterized by the almost total absence of fillets or angular members, by the constant use of ogee and wavy curves, and by the introduction of an annular roll, or scroll moulding, at the junction of the shaft, as shown in Fig. 114 (*k*) and (*l*). Although the annular member followed the shape of the shaft, the mouldings below were usually octagonal in form, the plinths, formed in two or more stages, being united by a chamfer, ogee, or some other simple moulding, as in Fig. 114 (*k*) and (*l*).

194. Windows. The long narrow windows of the Early English style were either used singly, as at Fig. 116 (*a*), or in

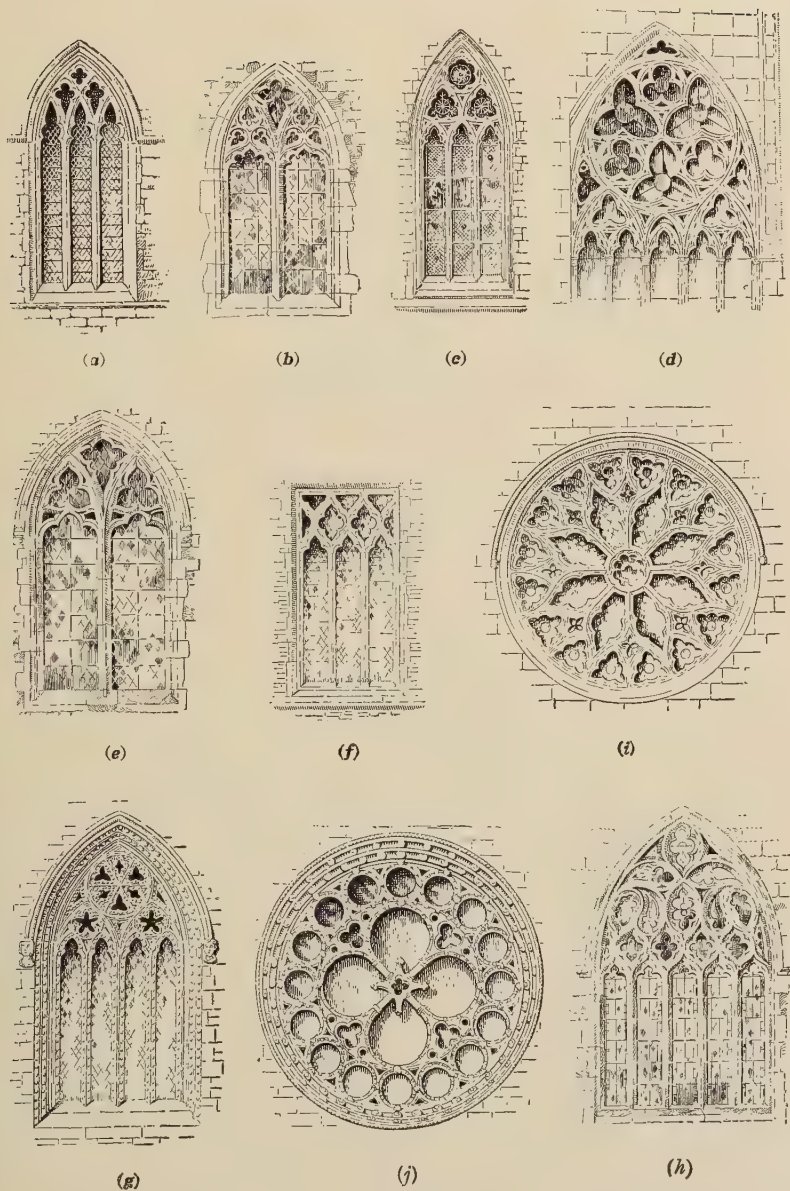


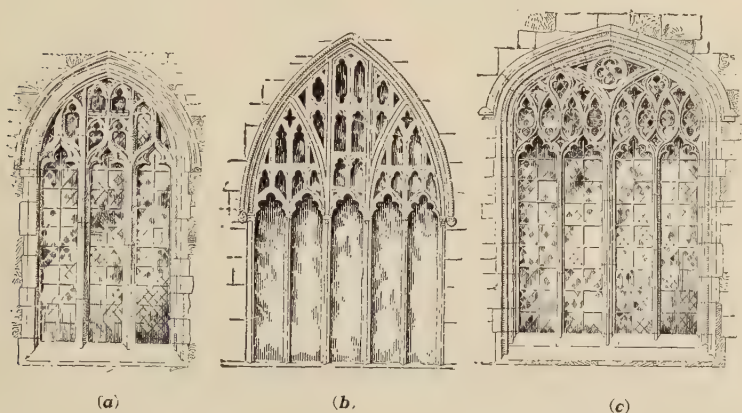
FIG. 117

combination, as at (*b*), in groups of two, three, five, and even seven lights. Where two lights only were used, a geometrical opening, consisting of a circle, a trefoil, or a quatrefoil, was usually formed between the window heads and the enclosing arch, as at Fig. 116 (*c*). Later examples of Early English windows are illustrated at (*d*) and (*e*). A common mode of ornamenting the windows of this style, more especially internally, was by means of small shafts, standing free of the general stonework, the caps of which were designed to receive the mouldings of the generally plain but occasionally trefoiled lancet-headed windows. The window jambs were often widely splayed internally, and the inner arch rarely conformed with that over the actual opening. Circular rose or wheel windows, an example of which is given at Fig. 116 (*f*), were common features of Early English buildings.

195. Windows of the Decorated period, which were much larger than those of the preceding style, were divided vertically by stone mullions into separate lights, the heads of which were filled with tracery of either a geometrical or a flowing nature. Examples of Decorated windows are shown in Fig. 117 (*a*) to (*h*). Fig. 117 (*g*) illustrates a very unusual treatment, in which the whole of the window is profusely decorated with the ball-flower ornament, and Fig. 117 (*h*) is a characteristic example of flowing or leaf tracery. The window heads were of various forms, the two-centred pointed arch prevailing, but plain and pointed segmental arches, ogees, and square heads were also used. The period was rich in beautifully designed circular windows, two characteristic types of which are shown in Fig. 117 (*i*) and (*j*). Of these circular windows that at (*j*) is a very early example.

196. Perpendicular windows, examples of which are given in Fig. 118 (*a*) to (*e*), can be distinguished from those of the Decorated period by the shape of the head of the opening, often that of a four-centred arch, and by the frequent use of transoms or moulded bands of horizontal stonework corresponding with the vertical mullions. Instead of being filled, as in the Decorated style, with flowing ramifications of stonework, the heads of Perpendicular windows have slender secondary mullions continued from the heads of the light between each principal mullion.

In Decorated windows variety of effect is obtained by the varied disposition of the principal lines of the tracery, but in Perpendicular windows it is more often due to changes in the setting-out of the minute parts. A window of four or more lights is generally divided into two or three parts by strong mullions running from



the head to the sill, as in the view of the west front of St. George's Chapel, Windsor, Fig. 119, the portion of the arch between them being doubled from the centre of the side division. In large windows the centre light often becomes an arch and in windows of

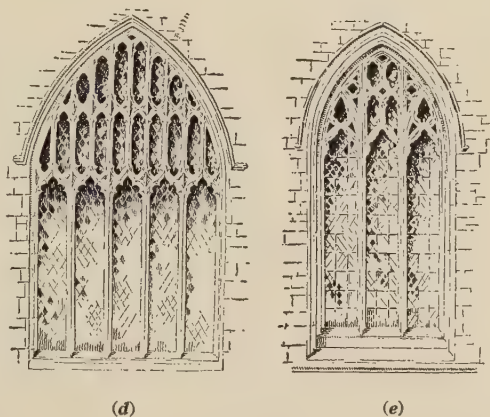


FIG. 118

seven or nine lights the arches springing across make two of four or five lights (the centre belonging to each). Arches are usually formed under the transoms, the latter often being ornamented with small battlements and flowers, as in Fig. 118 (a). In some windows the heads of the mullions rise in a vertical line

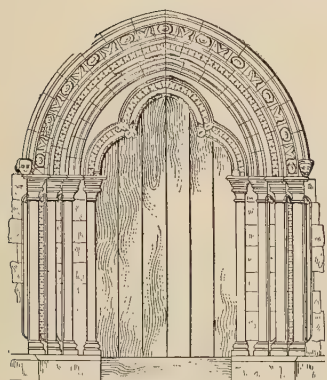
from the top of the arch of the lights below them. Large circular windows do not appear to have been often used during the Perpendicular period.

197. Doorways.—The doorways of the Early English period are remarkable for their great diversity and beauty of design. Numerous mouldings, profusely enriched with ball-flower or other ornamentation, embellished the pointed arches of the openings, and when shafts were used for the jambs, as in Fig. 120 (*a*), the doorways preserved the deeply recessed character of Norman

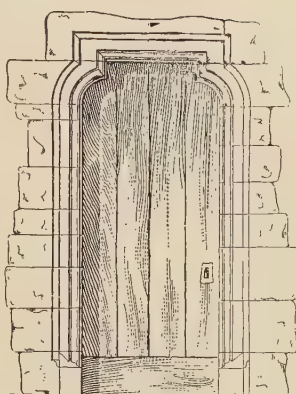


FIG. 119. ST. GEORGE'S CHAPEL, WINDSOR

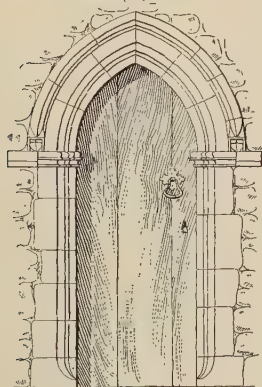
work. There was generally a weather moulding or label over the arch, the ends of which terminated in carved heads or flowers. Occasionally the inner mouldings of the arch were formed into trefoiled or cinquefoiled heads, as at (*a*). It was during the Early English period that the double-arched doorway first appeared—an arrangement that enabled two distinct doorways to be formed under one large arched recess or porch. Examples of small Early English doorways with flat and pointed heads, respectively, are shown in Fig. 120 (*b*) and (*c*).



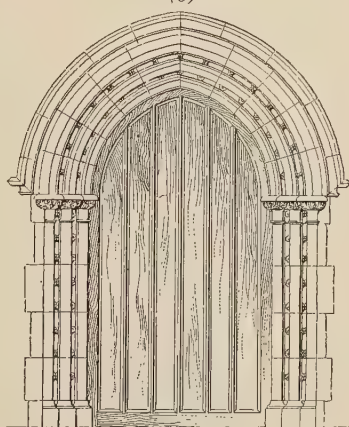
(a)



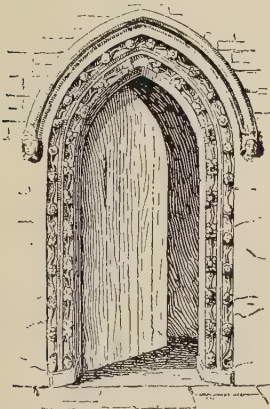
(b)



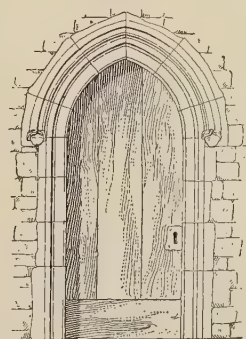
(c)



(d)



(e)



(f)

FIG. 120

198. Decorated doorways were of two distinct types, namely, those that had shafts, as in the example illustrated in Fig. 120 (*d*), and those in which the arch mouldings were continued in unbroken lines from the crown of the arch to the ground, as seen at (*e*) and (*f*). In this style the shafts of doorways do not stand free of the arch mouldings, but form parts of them. The arch of large doorways is nearly always pointed, but in small ones the ogee-shaped head is common. In late examples of the style, crockets and other forms of foliated ornamentation were freely used for the adornment of doorways.

199. The arch of the deeply recessed Perpendicular doorway was often surrounded by a moulded square-shaped head, as illustrated in Fig. 121 (*a*), the spandrels thus formed

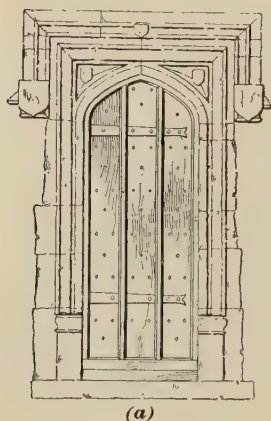


FIG. 121

being filled with tracery foliage, or sculpture. Small shafts, as at (*b*), worked on the jambs with the other mouldings, and thus only clearly defined by their caps and bases, were common. The prevalent four-centred arch was often used for doorways, but two-centred, ogee, and elliptical arches were also frequently employed.

200. Mouldings.—Although they display but little variety, Early English mouldings are well cut and definite in their nature.

The mouldings of openings, whether for doors or windows, were usually arranged in a manner to enable the circumscribing lines

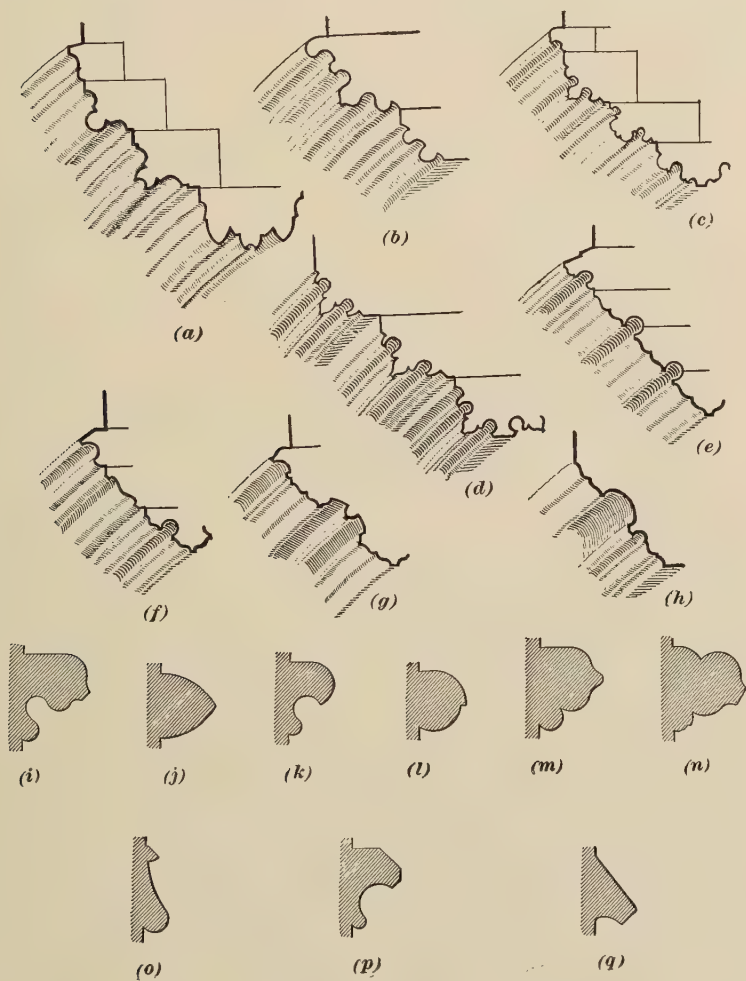


FIG. 122

of the more prominent parts of the moulding to form a series of rectangular recesses, as shown in Fig. 122 (a), (b), and (c). Alternate rounds or mouldings of semicircular section and deeply cut hollows, splays, and fillets were freely used in these mouldings,

the smaller rounds being often deeply undercut with a deep cavity on one side. The convex and concave surfaces thus formed were arranged so as to blend, one with another, without any separating fillet or angular member, as shown in (a), (b), and (c). Some characteristic examples of Early English string-courses or horizontal mouldings are given at (i), (j), and (k); that illustrated at (j) is known as the *pear-shaped bowtel*.

201. Rounds and hollows were the principal component parts of the mouldings of the Decorated period, but ovolos, ogees, and fillets were also freely used, as in Fig. 122 (d) to (g). The roll or scroll moulding, Fig. 122 (l), which has a sharp projecting edge on its surface, caused by forming the lower half of the roll from a smaller curve than the upper, is characteristic of Decorated work, and another moulding convex in the middle and concave at each extremity, although also found in Perpendicular work, was first used during the Decorated period. Other favourite string-course mouldings of the period are illustrated in Fig. 122 (m) and (n).

202. Perpendicular mouldings, which are flatter and less effective than those of either the Early English or Decorated period, are shown in Fig. 122 (h). Large shallow hollows and small rounds and ogees are the prevailing features of the mouldings of this period of Gothic art. Some characteristic Perpendicular string-courses are shown in Fig. 122 (o), (p), and (q).

203. Ornamentation.—The ornamentation of Early English mouldings was usually confined to the hollow surfaces. A well-known ornament of the period, known as the *dog-tooth*, Fig. 123 (a), consisted of four leaves joined in the form of a pyramid. Other enrichments of the Early English period comprised single leaves or flowers. The characteristic foliage of the period is shown in illustrations (c) and (d). The ornamentation of the Decorated style included the *ball-flower*, illustrated at (b), Fig. 123, the four-leaved flower set in a hollow moulding, as shown at Fig. 124 (a), and grotesque heads and animals. Crockets and finials were richly carved, *crockets* being the projecting leaves, flowers, and bunches of foliage that served to decorate the angular

terminations of gables, spires, canopies, and pinnacles, while the term *finial* is used to indicate the ornamental vertical projections placed at the apex of a spire, roof, gable, and similar parts. Small spires, called *pinnacles*, were constantly used for the adornment of the buildings. The spandrels of the arches were often filled in with well-executed naturalistic foliage, examples of which are given at (b) and (c).

204. During the Perpendicular period the ornamentation mainly consisted of foliage and flowers, arranged in running patterns, and of detached square embossed leaves, Fig. 124 (d), flowers, heads and grotesques, heraldic shields, and other devices. The large hollow mouldings of the arches and jambs of openings often contained canopied niches for statues. A favourite form of Perpendicular *cresting*, or cornice ornamentation, is shown at Fig. 124 (e).

205. As an architectural embellishment to the apex of the gable of a church or other religious building, the cross, the usual symbol of the Christian religion, was an important element in Gothic ornamentation. Its form varied considerably according to the architectural period of the building on which it was placed. Examples of the stone finial and cross of each period are given at Fig. 125 (a), (b), and (c).

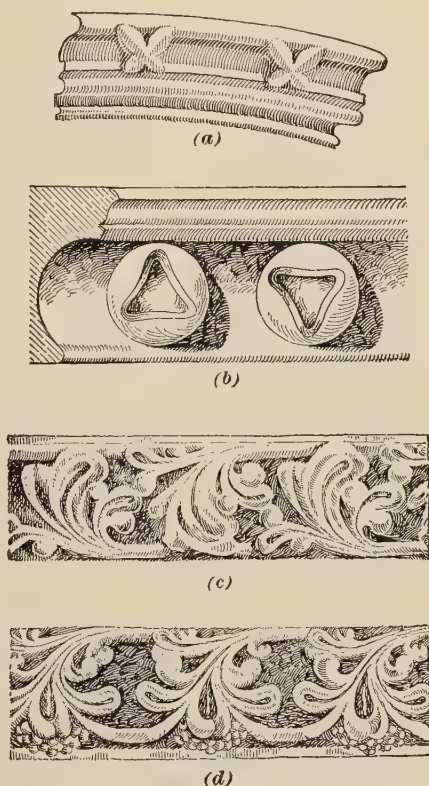


FIG. 123

Illustrations of the carved-stone floral ornamentation which terminated the labels, pinnacles, canopies, and gables of Gothic buildings are shown in Fig. 125, in which (*d*) illustrates an Early English label termination, (*e*) a Decorated canopy, and (*f*) a

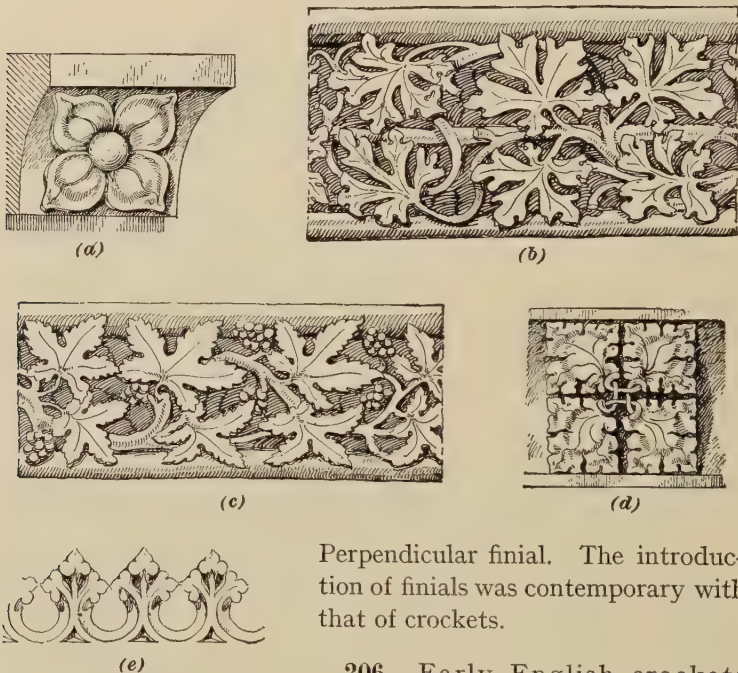


FIG. 124

Perpendicular finial. The introduction of finials was contemporary with that of crockets.

206. Early English crockets usually consisted of bunches of stalks and leaves curled back in the form of a bishop's pastoral crook, as shown in Fig. 125 (*g*). There was greater variety in Decorated crockets, as in Fig. 125 (*h*), which usually presented the form of a broad leaf, the edges of which were attached to the moulding on which it was placed while the middle part was pointed and raised. Perpendicular crockets were often carved in the form of square flat leaves, as at (*i*), united with the moulding by the stalk and one edge.

207. Examples of Early English, Decorated, and Perpendicular projecting ornaments, known as *bosses*, which were placed at the

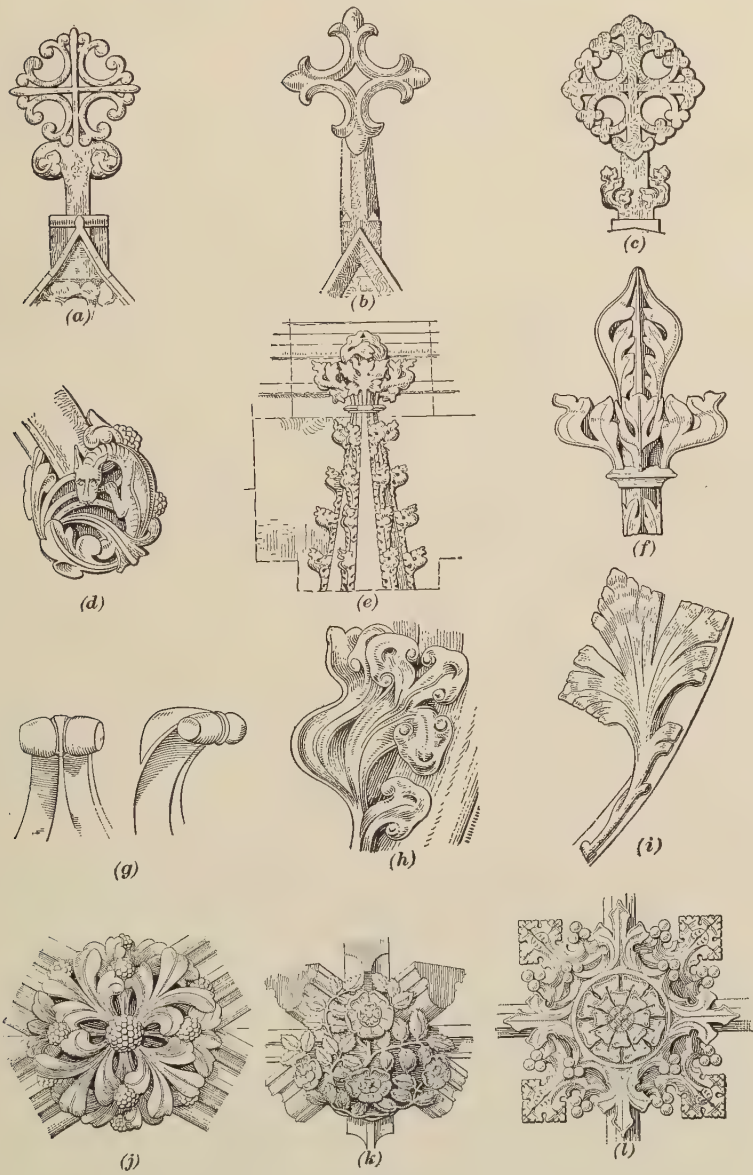


FIG. 125

intersections of groining and other moulded ribs, are given at (j), (k), and (l), Fig. 125.

208. The indented parapet, or battlement, was originally used only on fortified buildings, but it subsequently became an ornamental feature of churches and other Gothic buildings. In early battlements, as Fig. 126 (a), the *embrasures*, or intervals, between

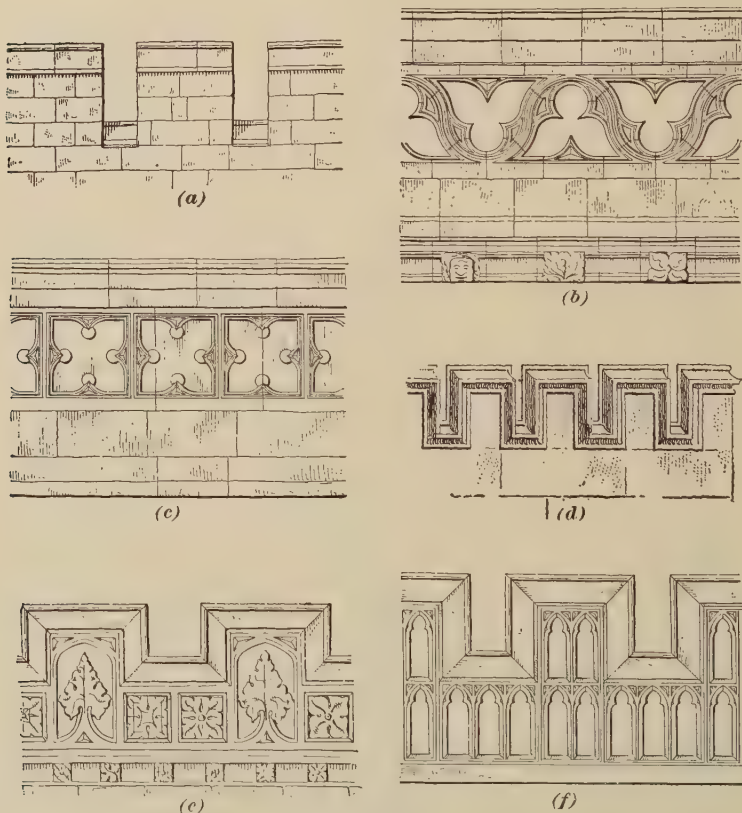


FIG. 126

the small solid pieces of walling, called *merlons*, were very narrow. The parapet walls of Decorated battlements were often pierced or panelled with trefoils, quatrefoils, or flowing tracery as at (b) and (c). Embattled parapets were special features of Perpendicular



(a)



(b)



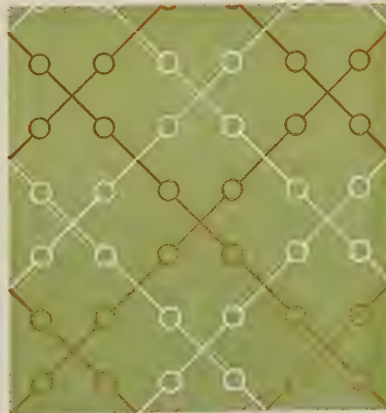
(c)



(d)



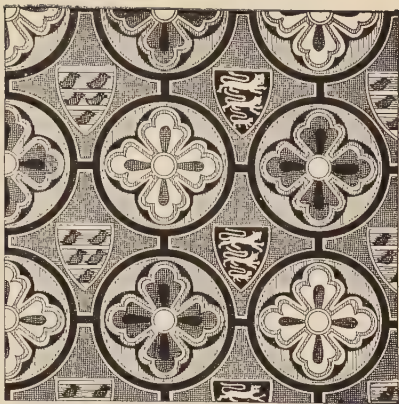
(e)



(f)



(a)



(b)



(c)



(d)



(e)



(f)

work. In the early period of the style copings were used only to serve as a horizontal finish to the merlons, but in later examples of Perpendicular work they became continuous, as at (*d*), and enclosed the vertical as well as the horizontal portions of the

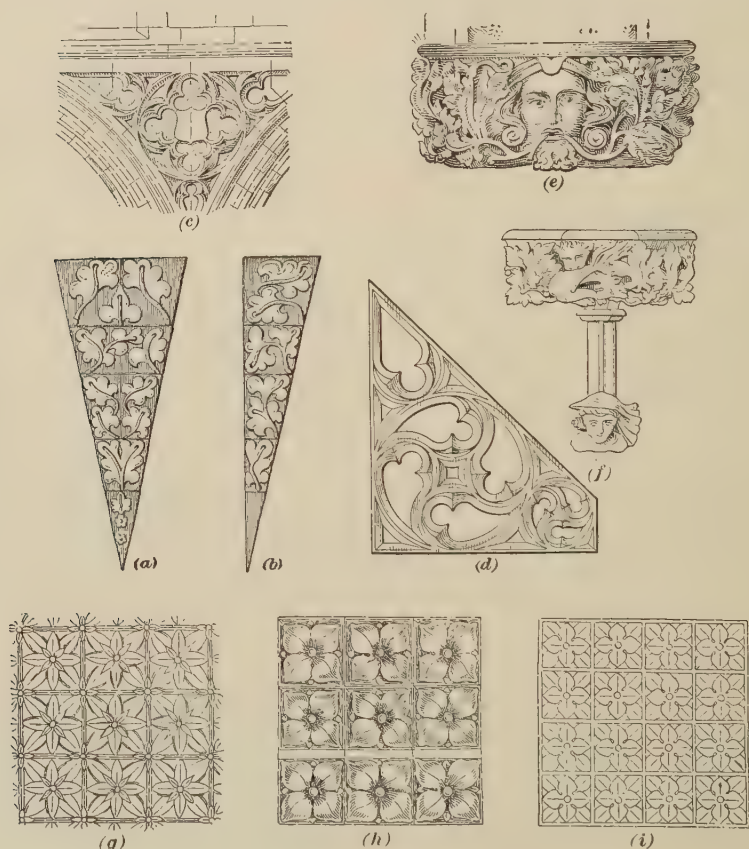


FIG. 129

masonry. Perpendicular battlements were often richly ornamented and panelled, as shown at (*e*) and (*f*).

209. Some examples of coloured mural decorations are given in Fig. 127. The ornamental patterns which relieve the brilliantly coloured backgrounds of these examples were probably

executed in stencil. Various forms of Gothic wall ornamentations are shown in Fig. 128, comprising bands of running ornament, as at (a), while enriched geometrical patterns are shown at (b) to (f)

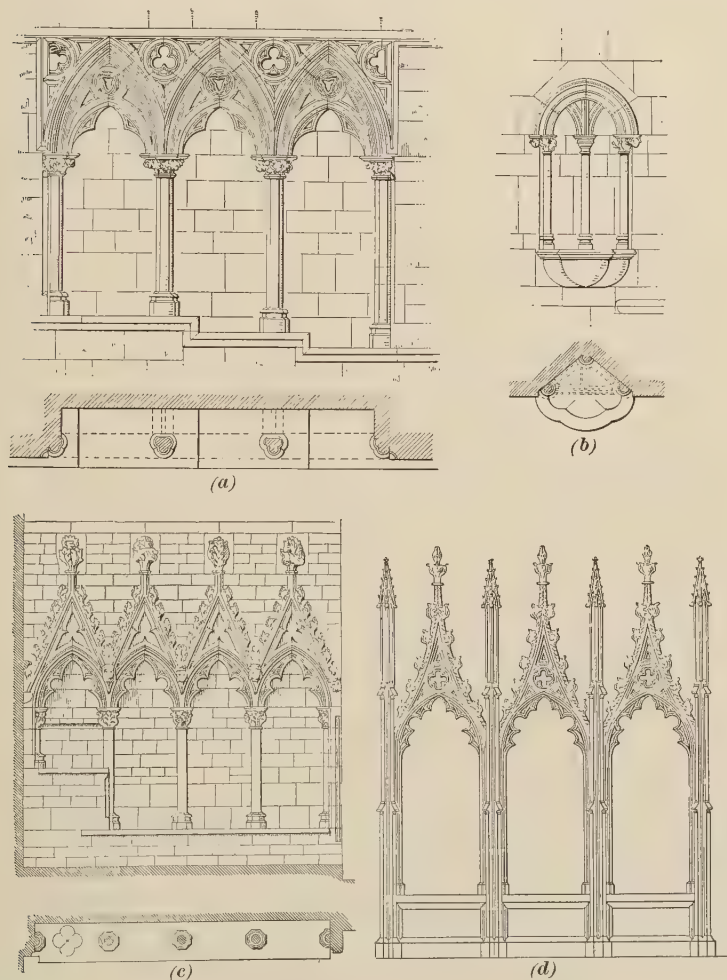


FIG. 130

210. The plain surfaces of walls were sometimes decorated with diaper-work, as in Fig. 129 (g), (h), and (i), consisting of floral ornamentation either carved or painted and arranged in

small square patterns. If carved, the flowers were usually sunk into the stone below the general surface of the wall. The spandrels of the arches were elaborately enriched in each period of English Gothic art with characteristic floral or other ornamentation. Fig. 129 (*a*) and (*b*) are examples of Early English spandrel carving. Examples of Perpendicular decorated spandrels are shown at (*c*) and (*d*), while Perpendicular ornamentation is illustrated at (*e*) and (*f*).

The seating recessed in the wall on the south side of the choir of a church for the use of the officiating clergy, and known as the *sedilia*, usually comprises three seats to which a *piscina*, or stone basin, was sometimes added. Architecturally, the design of the *sedilia* corresponded with the period of the church in which it was placed. Examples of *sedilia* belonging to the three periods of Gothic art are illustrated in Fig. 130 (*a*), (*c*), and (*d*), and a *piscina* of the Early English period is shown at (*b*).

PLANS, ROOFS, AND TOWERS OF PARISH CHURCHES

211. General Features of Plans.—England is exceptionally rich in parish churches, many of which display a wealth of architectural detail of great beauty, set in designs of immense variety. Indeed, owing to the diverse character of the plans of English churches, it is nearly impossible to select a single example as being thoroughly typical of its class. But, although no general rule can be laid down, yet the usual component parts of the English mediaeval church consisted of a deep and narrow chancel without aisles, a nave and two aisles, a broad square western tower with a belfry, and a south porch forming the principal entrance of the church. The plan of an ordinary parish church is represented in its simplest form by that of Warmington Church, Northamptonshire, Fig. 131, although the north porch is a somewhat unusual addition. In the plan of Outwell Church, Norfolk, Fig. 132, the addition of side chapels has detracted from the simple appearance of the main structure.

212. Roofs.—Although otherwise conforming in architectural detail with the period of Gothic art in which they were erected,

English parish churches were seldom covered with vaulted ceilings, but open timber roofs were generally used for nave, aisles, and chancel.

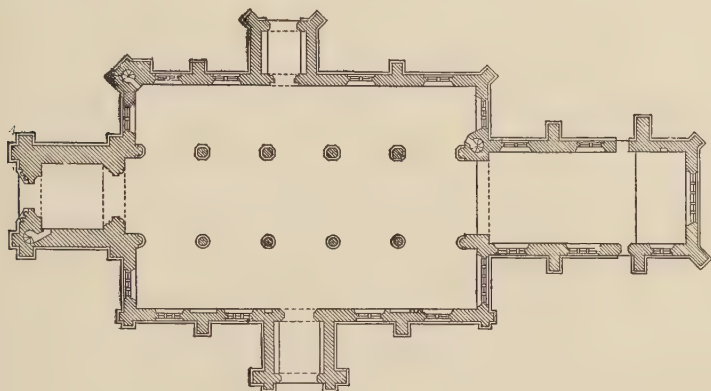


FIG. 131. PLAN OF WARMINGTON CHURCH, NORTHAMPTONSHIRE

The timber roofs of these beautiful examples of mediaeval art show great variety of design in combination with the most skilful

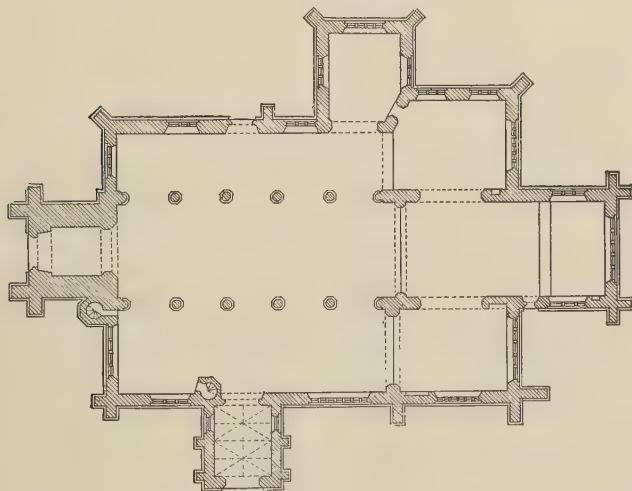


FIG. 132. PLAN OF OUTWELL CHURCH, NORFOLK

craftsmanship, and the comparative lightness of their roof construction had an important influence on the architecture of the



FIG. 133. ALL SAINTS'. STAMFORD

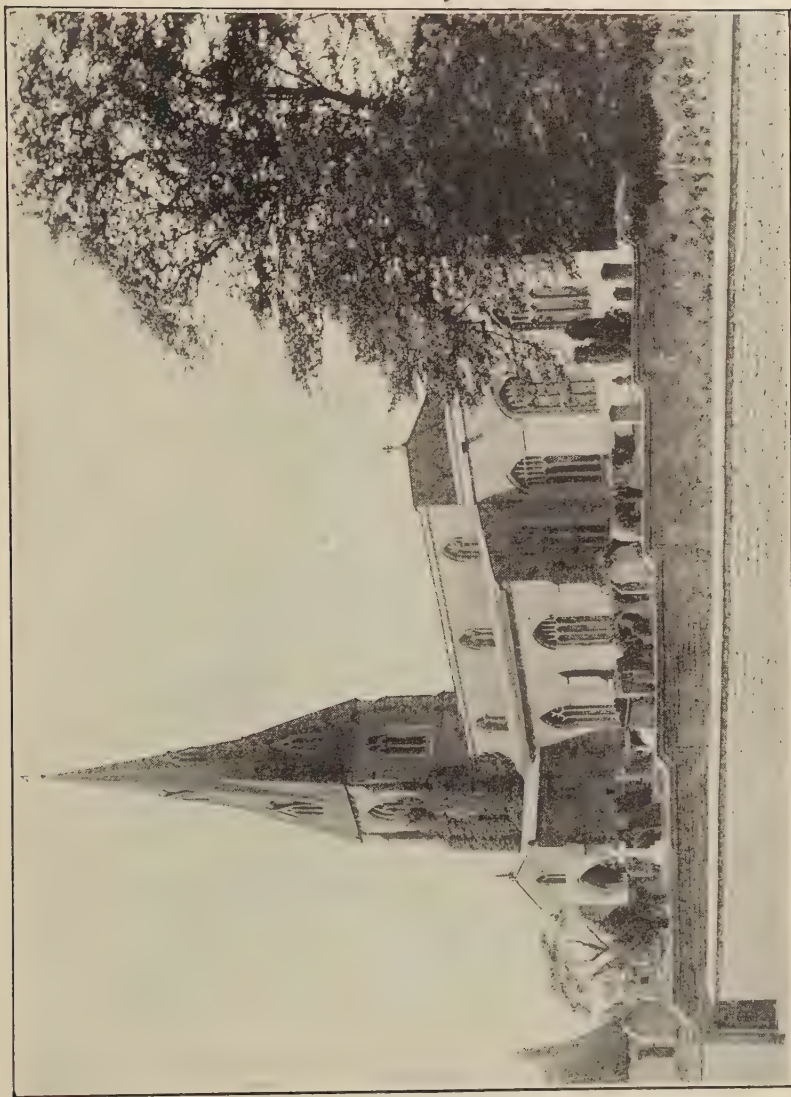


FIG. 134. COTTESMORE CHURCH, RUTLAND

parish churches. For example, neither solid buttresses nor massive pinnacles were required to resist thrusts and ensure stability, while the effect of the light roof was marked internally by the slender form of the pillars supporting the arches of the nave arcades.

Above the clerestory windows the ceilings between the elaborately carved trusses of the open roof were decorated in an endless variety of ways.

213. Spires.—Spires were first used as a covering for small turrets and afterwards applied, on a far larger scale, to church towers. The evolution of the tall graceful spire from the flat pyramidal roof was very gradual. In the Early English period the spires, usually octagonal in form, rose somewhat abruptly from the external face of the tower walls, as shown in Fig. 134, for there was no parapet. Each angle of the tower thus left uncovered by the octagonal spire was filled in by a portion of the square stone pyramid known as a *broach*, which, rising from the top of the tower, tapered back against the face of the spire. Decorated spires were usually made to spring from within the parapet wall of the tower, as in Fig. 133. In other respects, except in the amount of their enrichment, they did not materially differ from Early English spires, and, although the character of the details and ornamentation was considerably altered, the same general design was continued throughout the Perpendicular period.

214. All Saints', Stamford.—This excellent example of a fifteenth-century town church is remarkable for the external Early English screen or arcade which, as shown in Fig. 133, is continuous throughout the entire length of the south front of the church.

In this well-proportioned tower and spire solidity of construction and simplicity of design are combined in an attractive manner.

215. Cottesmore Church, Rutland.—The tower and spire of this country church, Fig. 134, are of the thirteenth century, but the other parts of the building have been rebuilt at various times

in accordance with the phases of art, either Decorated or Perpendicular, in vogue when the successive alterations were made.

216. Bell Tower, Evesham.—This fine example of a perpendicular bell tower, illustrated in Fig 135, is one of the few remains



FIG. 135. BELL TOWER, EVESHAM

of the ancient abbey of Evesham, a foundation dating from the eighth century. Characteristics of the period to which the tower belongs are found in the panelled wall surfaces, lofty battlemented parapets, and in the ogee-formed door and window labels.

GOTHIC SECULAR ARCHITECTURE

EUROPEAN STYLES

DWELLINGS AND MILITARY BUILDINGS

217. Similarity of Style in Different Countries.—Although the periods of transition that marked the progress of Gothic domestic architecture did not closely synchronize throughout Europe, yet a certain similarity of ideas is observable in the various changes made from time to time in the human habitations of the civilized world and the result ultimately attained in different countries was, substantially, the same. For this reason a short account of the ancient domestic buildings of England will suffice to give some idea of the universal development of house architecture during the period popularly known as the Middle Ages.

218. Primitive Dwellings.—Extensive remains of Roman houses have been found in all parts of Great Britain, but it is nevertheless fairly certain that the Roman occupation of this country did not lead to any permanent change in the national manners and customs of the people. Indeed, in Saxon times the early Roman civilization had been forgotten or destroyed and the dwellings of the English consisted of wooden huts of the most primitive construction. The interiors of these huts contained only one room, from which the smoke from the fire escaped as best it could, either by the door or through an aperture formed in the wall or roof. But the richer classes of the time do not appear to have fared much better, as the ordinary house of the *thane*, or nobleman, often consisted of little more than a large hall, used in the daytime as the common dining-room and at night as a dormitory for the retainers and servants, in addition to a small bedroom for the thane.

219. Interior Furnishings.—Even in the large towns decorative art appears to have been unknown, or, at any rate, its use was restricted to the embellishment of religious buildings. The bedding and pillows consisted of straw ; the skins of animals did duty for bed coverings, and massive benches, stools, tables, and chests were the only articles of furniture.

220. Norman Influences.—With the Norman Conquest came some important changes and improvements in the domestic architecture of the country, and the houses began to be modelled from those to which the Normans were accustomed in their own country. Consequently, the town houses of the twelfth century were usually constructed with stone walls and thatched roofs, those in the towns and cities being arranged in two floors, consisting of a half-underground lower story, called the *cellar*, and an upper chamber approached by an external staircase, known as the *solar*. The smaller houses arranged on this plan consisted only of a single room on each floor, the lower room being used by the servants, while the upper one served the dual purpose of a living-room and bedroom for the master of the house. Larger houses of this period contained four rooms, two on each floor.

221. Thirteenth-Century Dwellings.—In the thirteenth century the old main divisions of cellar and solar were still maintained in the ordinary houses of the period, but to meet the desire for increased comfort other rooms, in addition to the solar, began to be provided for the master's use. The internal faces of the walls were plastered and mural decorations introduced. Windows, hitherto mere apertures in the walls fitted with wooden shutters, were glazed, and chimney stacks and hooded fireplaces introduced.

222. Town Houses of the Late Middle Ages.—It is difficult to speak with certainty of the town houses of the fourteenth century, as the principal parts of the wooden superstructures have long since disappeared. They are, however, represented in the illuminated manuscripts of the time as having gables and enriched barge boards. The tradesmen's houses of the fourteenth century seem to have been two or more stories in height above the ground

floor, each story "overhanging" or projecting beyond the face of that immediately below it. In these early examples of civic domestic buildings the ground floor was used for business purposes while the upper floors contained the living-rooms of the household.

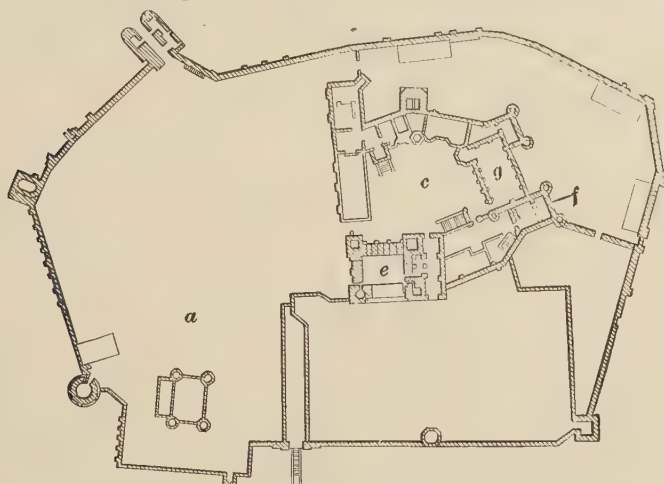
223. Examples of town houses and street architecture of the fifteenth and sixteenth centuries are comparatively plentiful. Built with a massive framework of oak timber, the intervening spaces of which were filled in with plaster, some beautiful examples of this form of construction, known as half-timbered work, are to be found in various parts of England.

224. Castles.—While the religion of the Middle Ages found complete expression in the cathedral and monastic buildings, the spirit of feudalism was reflected in the fortified houses of great nobles. Well protected from without by a moat, the boundary walls of the feudal castle were flanked by towers and bastions or projecting bulwarks. The parapets of the mediaeval castle were pierced with *machicolations*, or openings for the discharge of missiles, and within the precincts of the fortress there were three principal divisions, the first of which consisted of an outer courtyard *a*, known as the *ballium*, *bailey*, or *base-court*, as shown in Fig. 136 (*a*). A towered gateway, or *barbican*, provided with a drawbridge, Fig. 136 (*b*), guarded the approach to the base-court, which was further protected by a massive iron grating, or portcullis, suspended above the gateway of the barbican and capable of being quickly lowered in time of danger. Living-rooms for the servants and retainers, and stables and other subsidiary buildings, were in the outer courtyard

225. The second division of the castle contained the inner ballium, or court, *c*, Fig. 136 (*a*), round which were the chapel, the barracks, and residential accommodation. This portion of the castle was well protected by a second moat and a fortified gateway, but the third division of the castle, known as the *donjon*, or *keep*, was the real citadel.

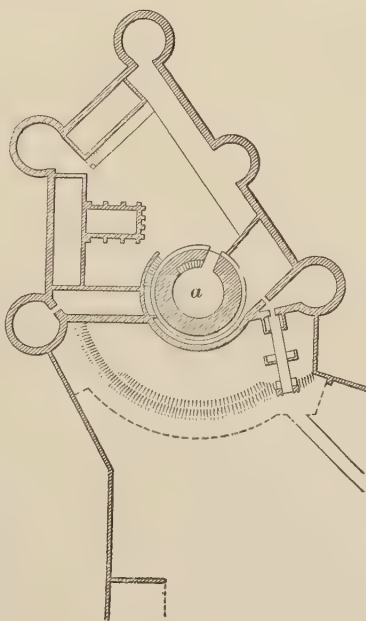
226. The donjon consisted of a self-contained inner fortress *a*, Fig. 136 (*b*), in which the occupants of the castle could find refuge

even when the other parts of the castle were in the hands of the



(a) PLAN OF KENILWORTH CASTLE

enemy. Usually square, but occasionally, as at the Castle of Coucy, Fig. 136 (b), circular in plan, and built with walls of enormous strength, the keep was divided into four or more storeys.* The lowest floor, sunk beneath the mound on which the keep was built, contained vaults for the storage of food and arms and a dungeon for prisoners. An external staircase led, through an outer doorway, to the room or rooms in the floor above. These rooms, which had no windows, obtained a certain amount of light from the loopholes or small narrow openings with which the walls were pierced



(b) PLAN OF THE CASTLE OF COUCY
FIG. 136

* This castle was completely destroyed by the Germans in the Great War

and communicated with the upper floors by means of staircases formed in the thick outer walls. The state apartments and residential rooms, well provided with windows and fireplaces, were in the upper part of the keep.

227. Country Mansions.—During the thirteenth century there was less necessity for the construction of fortified dwellings, and the castellated mansion began to assume a more domestic and peaceful aspect, and a desire for increased comfort was observable in the arrangement of the large houses of the period, to which many rooms were added.

The fourteenth century was marked by a further development in English mediaeval architecture. A higher state of civilization and greater refinement revolutionized the plans of large domestic buildings. The gatehouse, or entrance, led into a spacious open quadrangle, at the farther end of which was the projecting porch of the large hall. Adjoining the hall were the kitchen, buttery, storerooms, and other domestic offices. Wing buildings, containing dormitories for the servants, flanked the sides of the quadrangle. The solar with its cellar projected from one end of the hall and the chapel was usually placed near it.

228. The diminution of the hall, both in size and importance, is a characteristic feature in the domestic architecture of the fifteenth and sixteenth centuries. At that period it ceased to be reserved exclusively for banquets. Ceremonial state dinners were no longer popular, and as additional living-rooms were now provided, the master of the house and his family were enabled to dine in private. The large hall still retained in some measure its original importance, but its utilitarian character was gradually disappearing. Its plan, however, was not greatly altered, as the raised dais, with the head table placed transversely and the benches and tables in the body of the hall arranged longitudinally, remained as of old. But the panelled, coloured, and gilded ceiling of the hall was lower; sometimes it was nearly flat and the wainscot wall-finishing was often embellished with linen-pattern panels.

229. The windows, now glazed, were much larger than in the fourteenth century, and the oriel or polygonal-shaped window

at the side of the dais was continued up the full height of the hall. An elaborately designed fireplace replaced the simple hooded recess of former times and wide rectangular oak staircases, with carved balustrades and newels, superseded the ancient narrow winding stairs. The kitchen arrangements remained as before, but so many additional rooms were added that the former distinctive character of kitchen, buttery, and pantry was lost. Domestic chapels still continued to be important features of English mansions.

FORTIFIED STRUCTURES

230. Warwick Castle.—The inner court of Warwick Castle, one of the best-preserved examples of an English castellated mansion of the time of Richard II, is shown in Fig. 137 (*a*); the main floor of the building containing the large hall is placed above a basement story utilized for the kitchen and domestic offices, and the drawing-rooms, state bedrooms, dining-room, and chapel adjoin the hall. Upper floors are formed over the wing buildings terminating on either side of the hall. The tower on the right, Fig. 137 (*a*), is known as Cæsar's tower. This, the oldest part of the building, is said to date from Norman times, but the bulk of the residential portion of the castle belongs to the fourteenth and fifteenth centuries. The tower on the left is known as Guy's tower; the river front of the castle is illustrated in Fig. 138, and the gateway by which the court is approached in Fig. 137 (*b*).

231. Kenilworth Castle.—Kenilworth Castle is shown in plan in Fig. 136 (*a*). Founded about the year 1120, this building was one of the finest and most extensive of English baronial castles. The walls of the oldest portion of the building, the Norman keep *e*, are some 15 or 16 feet in thickness. Beyond it the tower *f*, known as Mervyn's Tower, built by John of Gaunt in 1392, adjoins the pleasance, and to the south stands the banqueting hall *g*, also dating from the reign of Richard II. Later additions, added by the Earl of Leicester in the reign of Elizabeth, comprise the white hall, the presence chamber, and the privy chamber, all of which line the inner court. The outer lines of defence, which included four towers, can still be traced.



(a)



(b)

FIG. 137. WARWICK CASTLE



FIG. 138. WARWICK CASTLE



FIG. 139. BODIAM CASTLE, SUSSEX

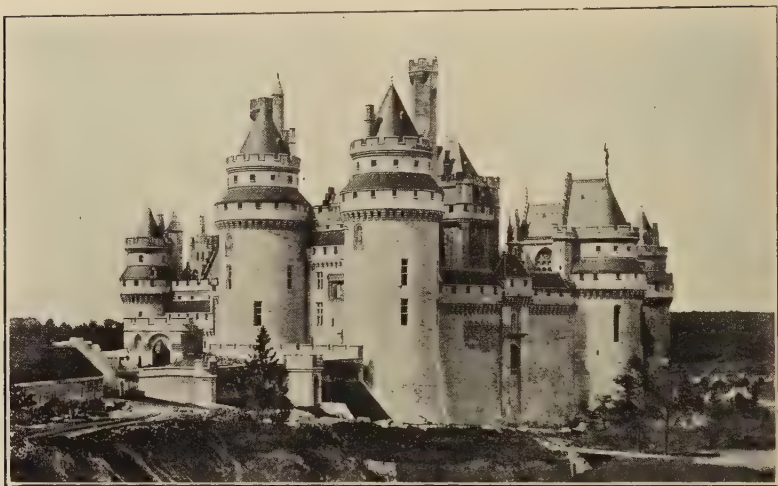


FIG. 140. CHÂTEAU DE PIERREFONDS, FRANCE

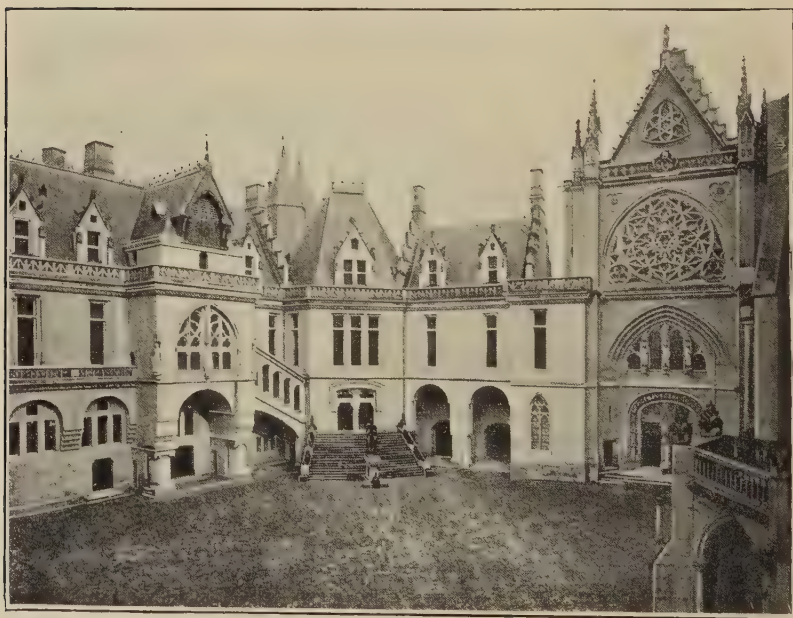


FIG. 141. COURTYARD OF CHÂTEAU DE PIERREFONDS

232. Bodiam Castle, Sussex.—A broad moat surrounds Bodiam Castle, which is a fine example of a fourteenth-century fortress. Its plan, square in form, includes four circular towers placed at the angles. Subsidiary square towers occupy central positions in the four façades of the building. The main gateway, portcullis, and machiolated parapets, Fig. 139, are in a good state of preservation.



FIG. 142. CHÂTEAU DE FONTAINE HENRI

233. Château de Pierrefonds, France.—There is a marked difference between the external and internal aspect of the Château de Pierrefonds, which was once a royal residence. Externally, as shown in Fig. 140, the structure presents all the characteristics of a mediaeval fortress, whereas viewed from the inner courtyard, as in Fig. 141, it bears a close general resemblance to many of the palatial dwellings erected in France during the early Renaissance period.

234. Château de Fontaine Henri.—Fig. 142 illustrates a portion of the buildings surrounding the inner court of the Château de

Fontaine Henri. The high roof, tall chimney, and flanking turret of the end pavilion are thoroughly characteristic of the late period of French Gothic art to which this building belongs.

235. Château de Nacqueville.—The gateway of the Château de Nacqueville with its drawbridge and moat, illustrated in



FIG. 143. GATEWAY OF CHÂTEAU DE NACQUEVILLE

Fig. 143, is another excellent example of French mediaeval art as applied to the castellated dwelling house.

236. Hohensalzburg Castle.—The picturesque and pleasing appearance presented by the Castle of Hohensalzburg, Germany, a view of which appears in Fig. 144, is the result of the effective



FIG. 144. HOENSALZBURG CASTLE, GERMANY

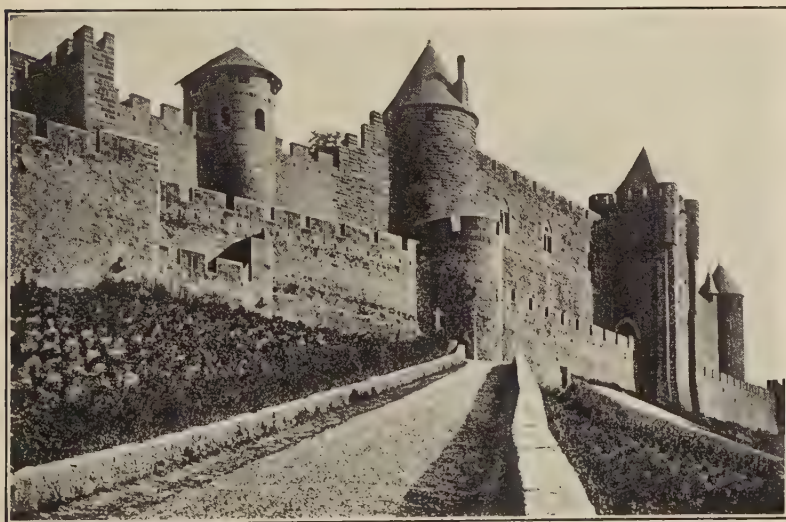


FIG. 145. BATTLEMENTS OF CITY OF CARCASSONNE' FRANCE

massing of the fortified walls and towers aided by the natural advantages possessed by the commanding site on which the structure stands.

237. Carcassonne.—The city of Carcassonne, in France, is a fairly complete and comprehensive example of a thirteenth-century fortified town. Fig. 145 illustrates a portion of its double line of fortifications, in which there are no fewer than fifty towers standing between battlemented walls and dominated by an inner castle.

238. Château de Blois.—The Castle of Blois, France, which is shown in plan in Fig. 147, is the most attractive and interesting of the many stately châteaux situated on the banks of the Loire. The irregularly shaped inner court of this historical building is lined by buildings of varying styles of architecture. For example, the chapel *a* on the south side and the façade of the castle on the east were built by Louis XII in 1501. The west side *b*, fronting the entrance façade *c*, is a later addition and dates from 1635, while the elaborate north side of the structure *d*, constructed in 1518, is the work of Francois I. An old thirteenth-century building, known as the Salle des Etats *e*, connects the north and east blocks. The central doorway of the front or entrance façade, shown in Fig. 148, is surmounted by a life-size equestrian statue of Louis XII, which occupies a niche formed under a richly decorated double canopy. A porcupine, the emblem of the king, crowns the head of the adjoining small doorway. Both doorways are shown in detail in Fig. 149 (*a*) and (*b*). The façade of Louis XII is illustrated in Fig. 150, and Fig. 146 shows in detail a portion of the arcaded building of the same date as the portion that faces the inner court. Fig. 150 and Fig. 151 (*a*) and (*b*) illustrate the various buildings as seen from the inner courtyard. The magnificent octagonal external staircase shown in Fig. 150 belongs to the Renaissance period of art.

239. City Gates.—Some of the ancient gateways attached to the walls that formerly enclosed mediaeval towns are still in existence. The best English examples of these interesting structures are found at York, where the city walls, built about the



middle of the fourteenth century, followed the lines of the old Roman fortifications. Of the six city gates at York, that known as Walmgate, illustrated in Fig. 152, has an outwork, or barbican, and a portcullis. Another example from York, illustrated in



FIG. 147. PLAN OF THE CHÂTEAU DE BLOIS

Fig. 153, shows a city gate of the usual type. The old gateway of Nancy, France, is shown in Fig. 154, and that of Bordeaux, which is much later in date, in Fig. 155.

PALACES AND DWELLING HOUSES

240. Palace of the Dukes, Nancy.—French secular architecture of the late sixteenth century is well illustrated in the portal of the ducal palace at Lorraine, shown in Fig. 156. This doorway possesses many of the characteristic features of the Renaissance period, notably in the Italian pilasters that flank the archway and in the design of the pinnacles of the crowning gable.

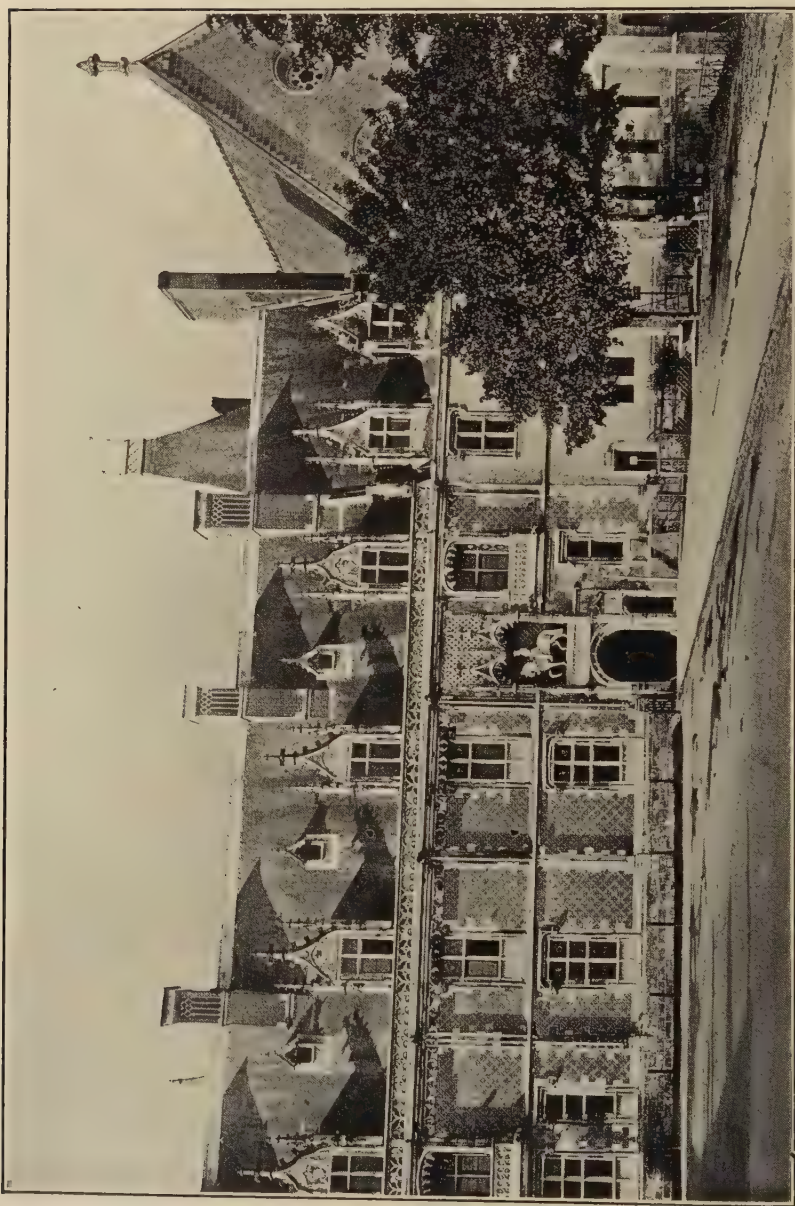
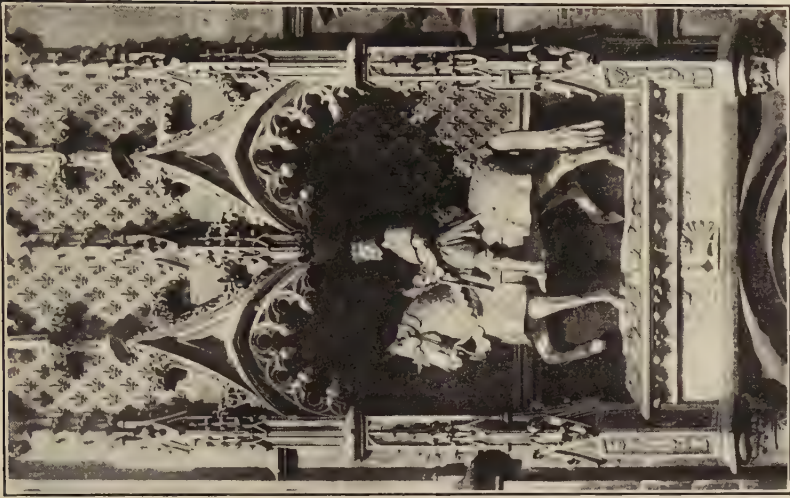
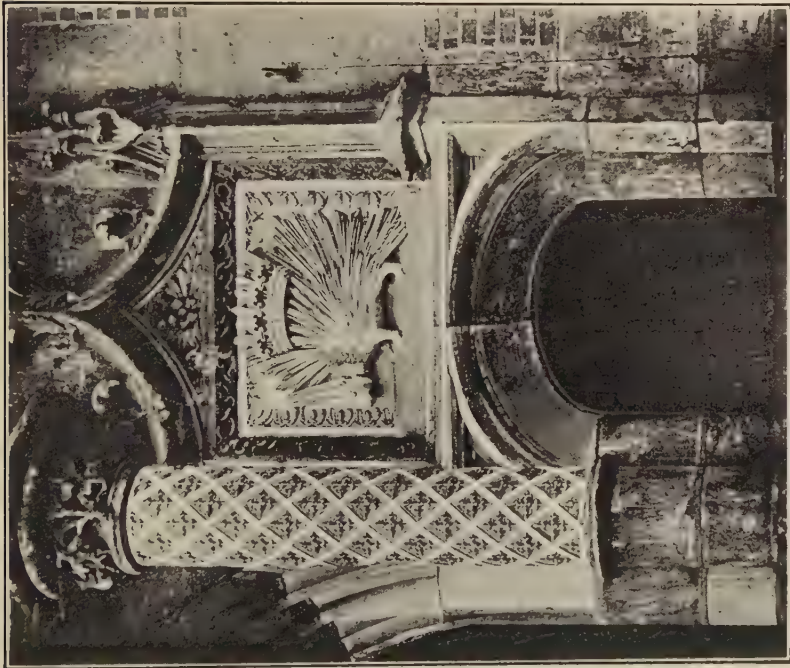


FIG. 148. FRONT FAÇADE OF THE CHÂTEAU DE BLOIS



(b)



(a)

FIG. 149. DETAILS OF DOORWAY CHÂTEAU DE BLOIS

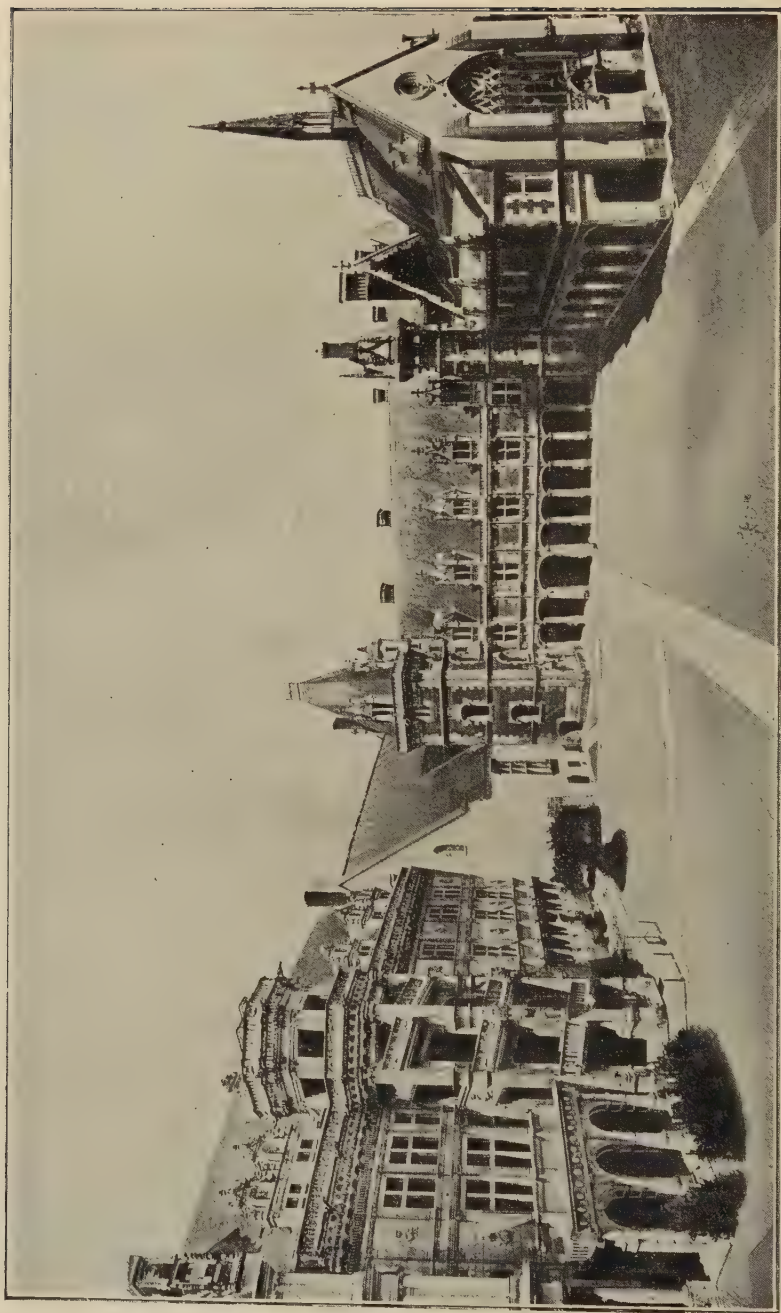
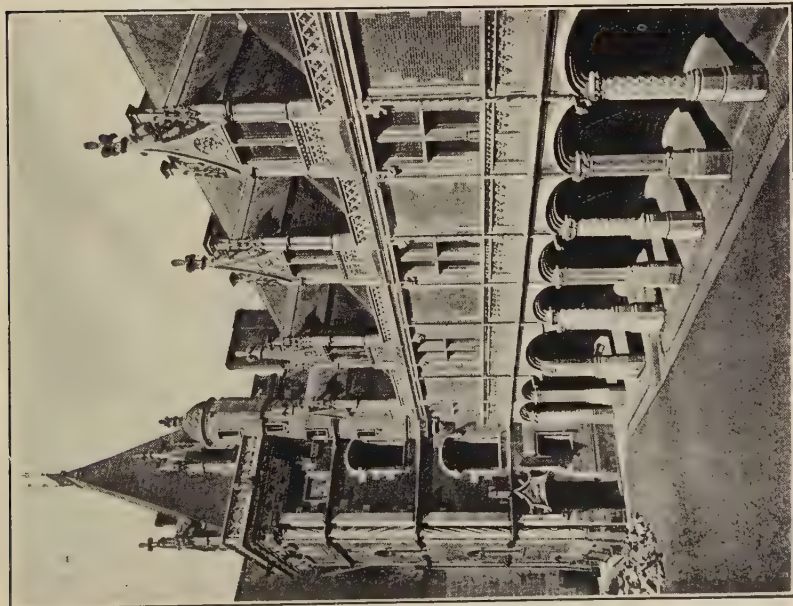
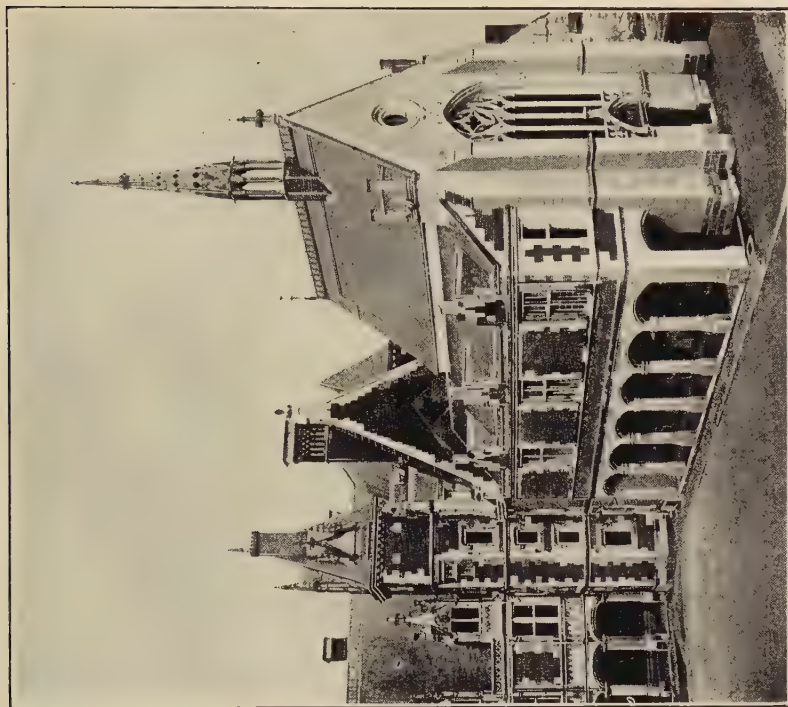


FIG. 150. COURT OF CHÂTEAU DE BLOIS



(a)



(b)

FIG. 151. DETAILS OF COURT, CHÂTEAU DE BLOIS

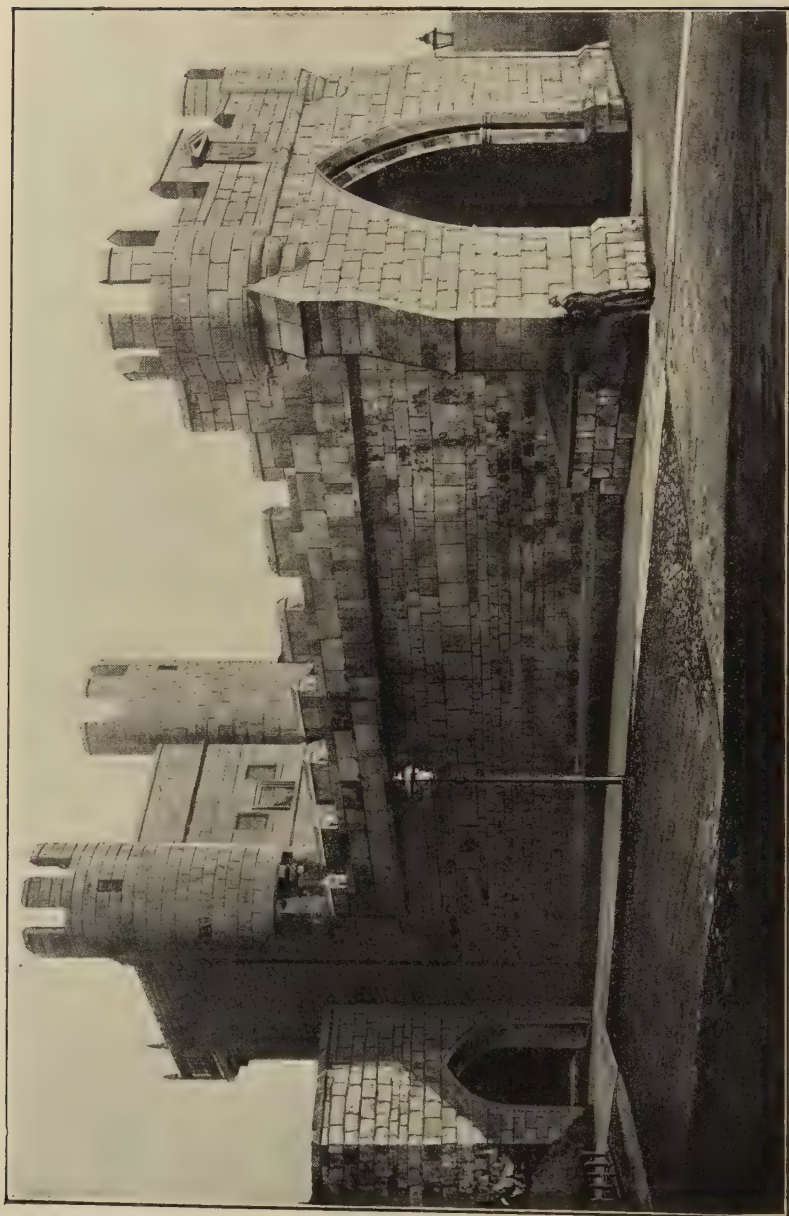


FIG. 152. WALMGATE, YORK

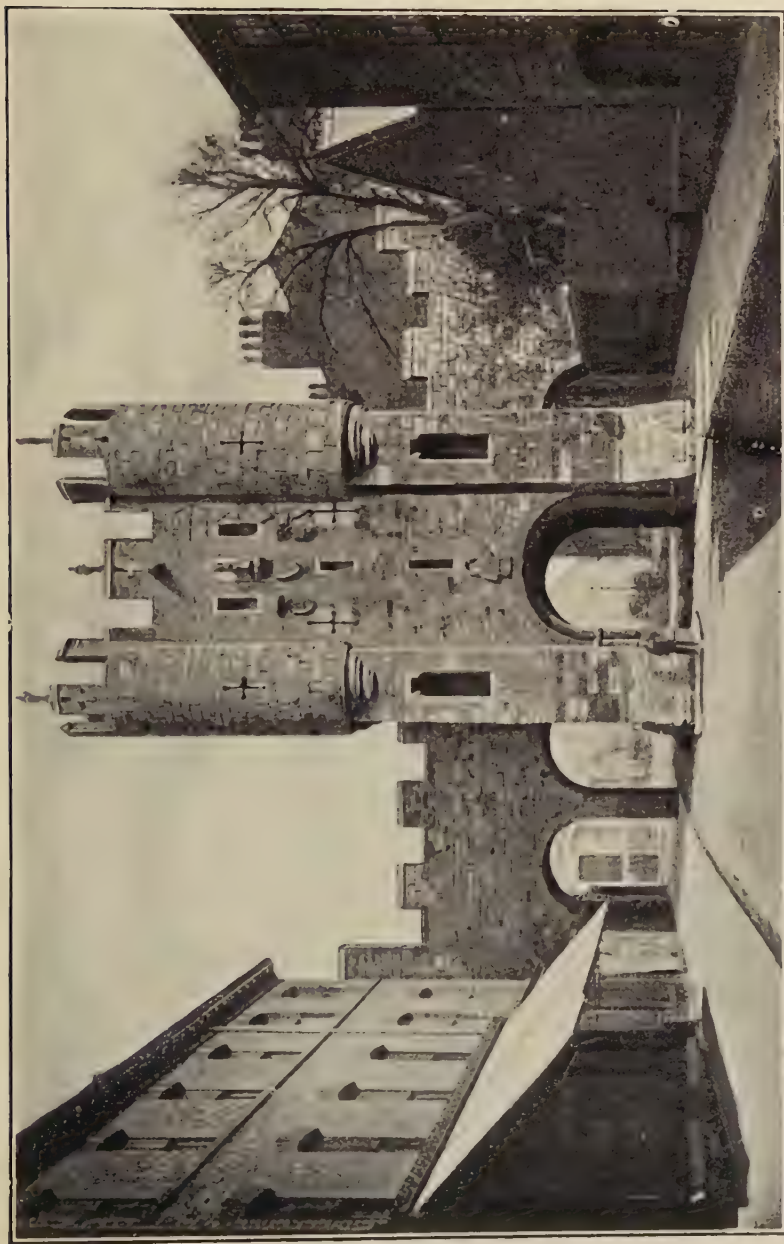


FIG. 153. CITY GATEWAY, YORK

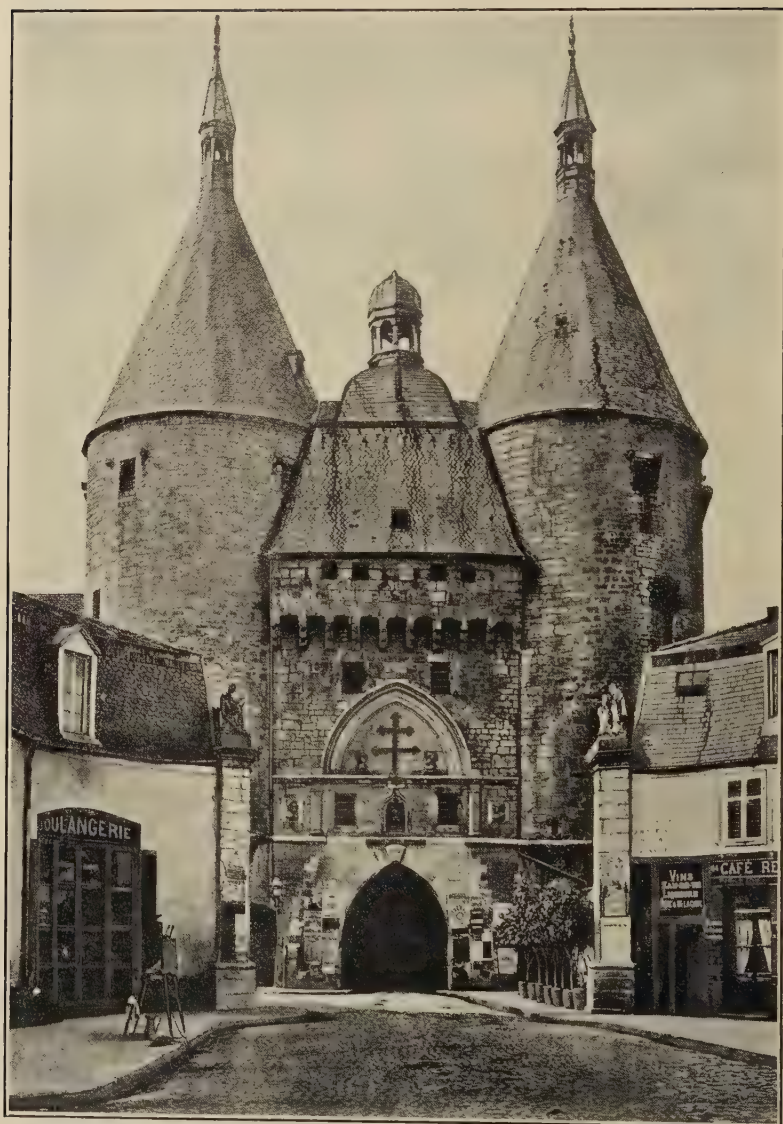


FIG. 154. GATEWAY OF NANCY, LORRAINE



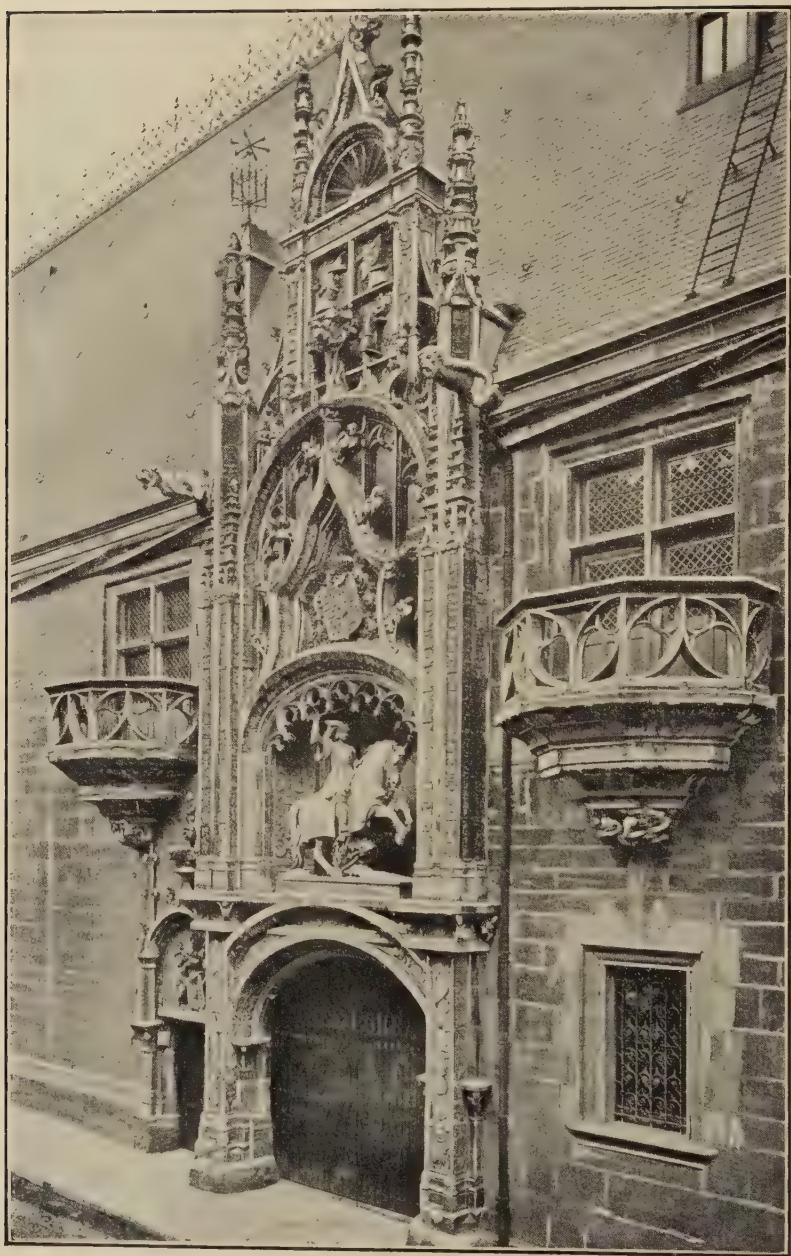


FIG. 156. PORTAL OF DUCAL PALACE AT NANCY, LORRAINE

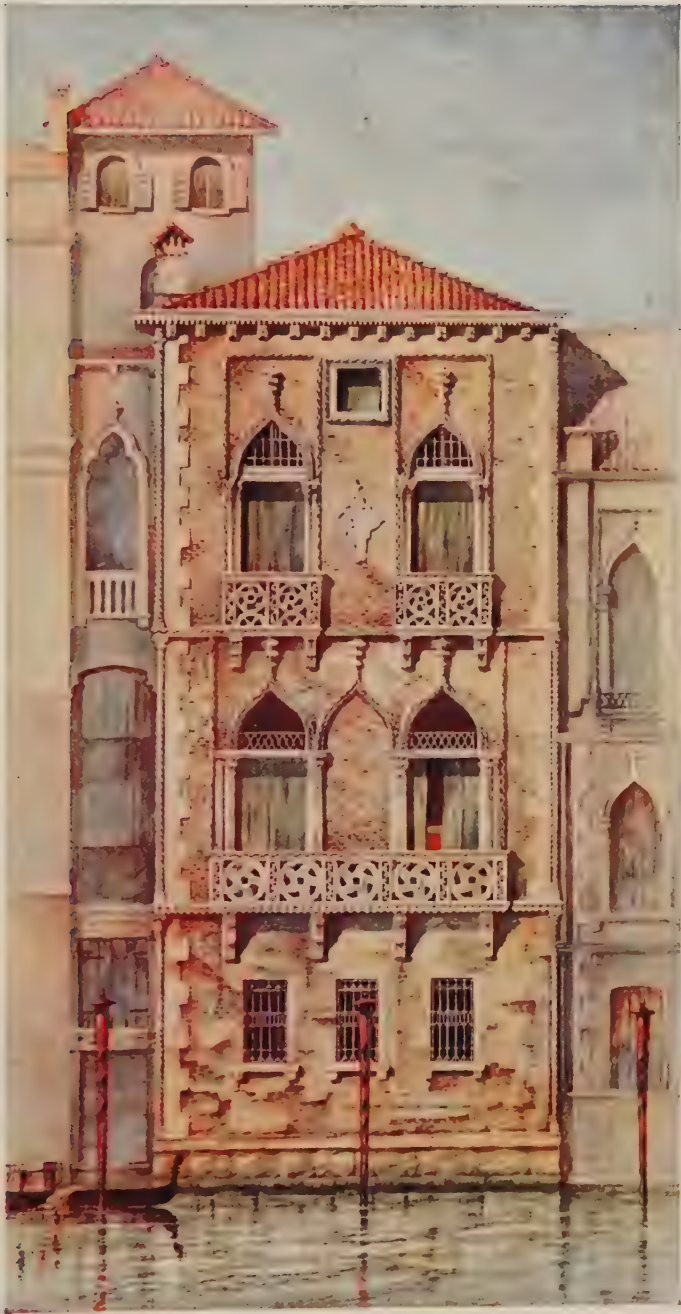




FIG. 158. PALAZZO CAVALLI, VENICE



FIG. 159. PALAZZO FOSCARI, VENICE

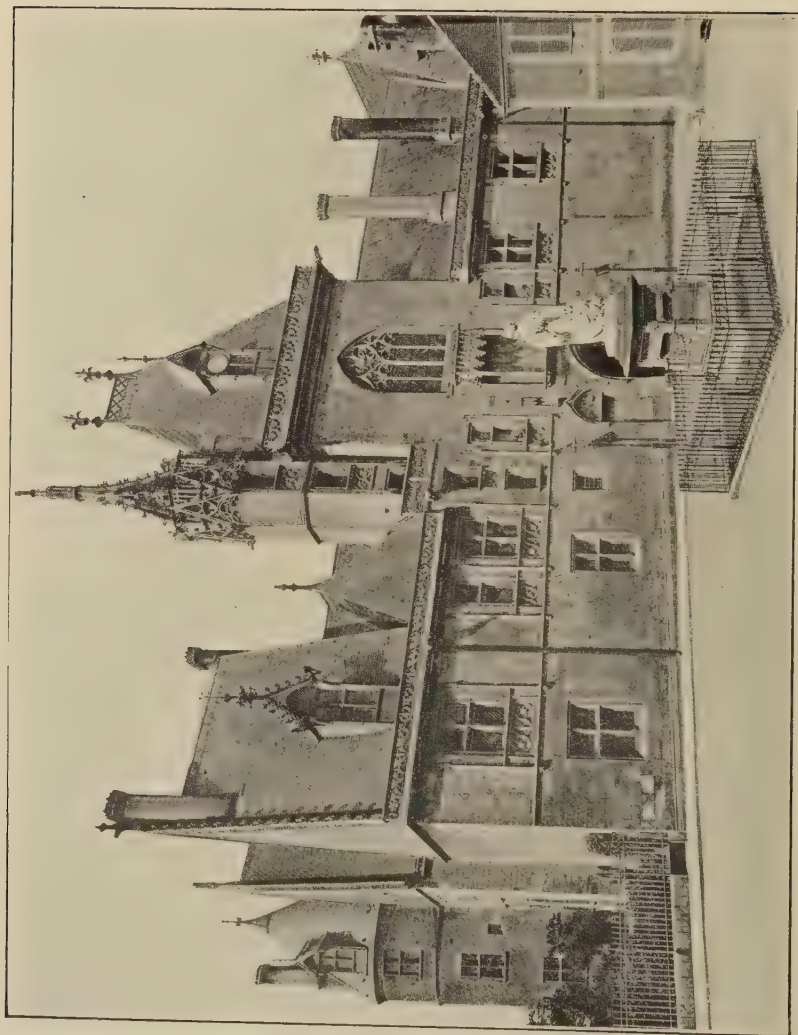


FIG. 160. HOUSE OF JACQUES COEUR, BOURGES

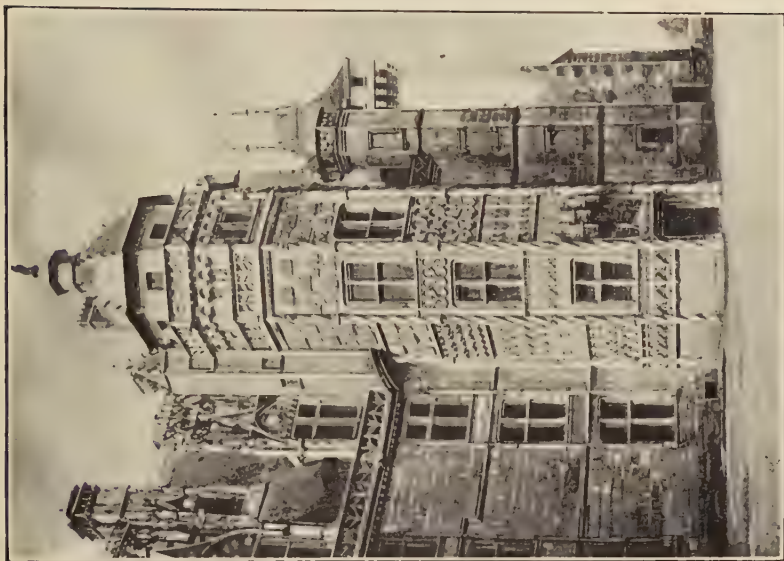


FIG. 162. STAIR-TURRET FROM CHÂTEAU DE MEILLANT

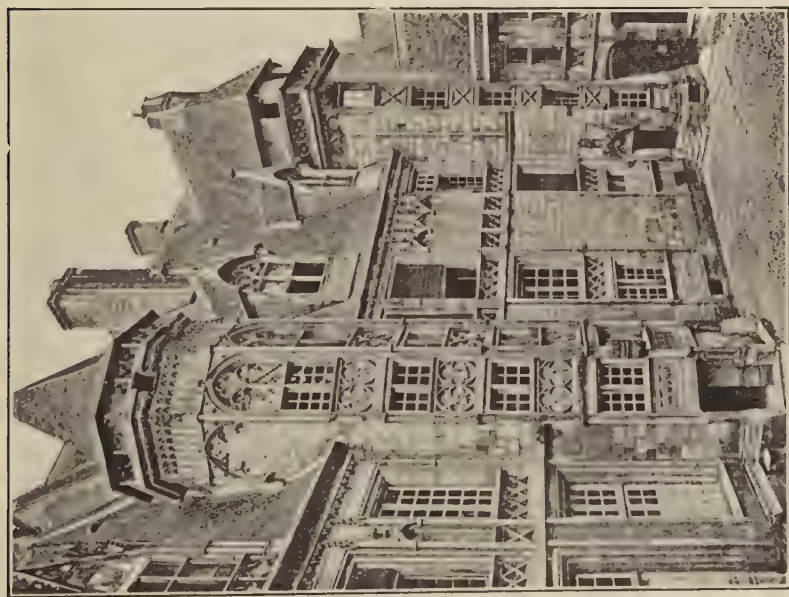


FIG. 161. COURTYARD OF HOUSE OF JACQUES COEUR, BOURGES



(a)



(b)

FIG. 163. HALF-TIMBERED GOTHIC TOWN HOUSES, FRANCE

241. Venetian Palaces.—The essential difference between the Gothic art of the Venetians and that of the rest of Italy is clearly shown in the marked individuality of design associated with the façades of the Gothic palaces of Venice, several of which stand side by side on the Grand Canal. Of these buildings the palaces of Cavalli and Foscari, Figs. 158 and 159, are good representative examples. The component parts of the



(a)



(b)

FIG. 164. GERMAN GOTHIC TOWN HOUSES

design of these and other similar façades consist of a large strongly emphasized ground-floor doorway and two or more large central loggias, or galleries, with projecting balconies on the upper floors. Owing to the vast amount of unbroken walling usually obtainable at the ends of the façade, the solidity of the flanks of the buildings is in pleasing contrast with the light open treatment of the central features. Fig. 157 illustrates the façade of the small Palazzo Contarini-Fasan, a simple and unaffected example of the architecture of its period.



FIG. 165. DUTCH GOTHIC BRICK HOUSES

242. House of Jacques Coeur, Bourges.—The street front of this splendid example of a French mansion of its period, 1443, is illustrated in Fig. 160. Its owner, Jacques Coeur, was minister of finance to Charles VII. Access is gained to the inner courtyard through the central archway of the street façade. This courtyard is bordered by a series of buildings, comprising large halls, living-rooms, and spacious projecting staircases, the architectural aspect of which is shown in the view, Fig. 161, illustrating a portion of one of the inner façades. Semi-octagonal stair-turrets, which became more fully developed at a later period of French art, were characteristic features of these palatial and

picturesque dwellings of the late Gothic period. A stair-turret from the house of Jacques Coeur is seen in the view, Fig. 161, and another example from the Château de Meillant is given in Fig. 162.

243. Smaller Dwelling Houses.—Many of the half-timbered houses that superseded earlier town houses of stone construction were of elaborate design and exhibited skilful workmanship. Several stories were often formed in the high-pitched roofs that were broken by picturesque dormers or gabled toward the streets. Slender columns and mouldings enriched the oak uprights and the longitudinal beams of the dwelling, the upper floors of which were boldly cantilevered out over the narrow street. French examples of half-timbered town houses are illustrated in Fig. 163 (*a*) and (*b*), and the less-attractive German houses of the period in Fig. 164 (*a*) and (*b*). Fig. 165 illustrates the street fronts of some small brick houses with stepped gables that were common in many towns in the Netherlands.

HISTORY OF ARCHITECTURE

(PART 4)

RENAISSANCE ARCHITECTURE

ORIGIN AND DEVELOPMENT

HISTORICAL NOTES

1. Renaissance Defined.—The term **Renaissance**, or re-birth, not only applies to the great revival of the arts and literature of ancient Greece and Rome, but also to the general advance in civilization that took place throughout Europe during the course of the fifteenth and sixteenth centuries. In addition, this epoch-making period marks the commencement of the history of modern nations and of the intellectual life of the present day.

2. Causes of the Renaissance.—Many circumstances combined to produce the almost universal thirst for knowledge and widespread admiration for letters, art, and science that characterized the dawn of the new era, which at the close of the Middle Ages caused the period of the Renaissance to become one of artistic activity, scientific invention, and maritime discovery.

3. The capture of Constantinople by the Turks, in 1453, had an important share in the development of the intellectual awakening of the fifteenth century. Many almost priceless examples of the literature of ancient Greece and Rome had been collected and jealously guarded for hundreds of years in the libraries of Constantinople, and when, on the fall of the old capital of the

Western Empire, the Greek inhabitants fled from their captured city to various parts of Italy, they carried with them many old Greek and Roman manuscripts and books. These works were eagerly sought after and studied by learned men who became completely captivated with the wonderful imagination and masterly literary style of the ancient writers. The literature thus brought to Florence, Milan, Rome, and other Italian cities soon found its way to the universities of foreign nations, and was instrumental in arousing world-wide admiration for classic thought and classic art.

4. Printing, invented by John Gutenberg in 1436 and brought to a state of perfection twenty years later, carried literature and scientific knowledge within the reach of all people. Books, hitherto laboriously copied by hand on parchment, were now rapidly and cheaply produced and so circulated among a far wider range of readers.

5. **Cradle of the Renaissance.**—The revival of arts and letters first took root in Florence, whence it spread to Rome and other Italian cities, and was there generously encouraged by many of the civic rulers, who founded academies for study and for the exchange of intellectual views. Libraries and universities were established and Greek and Latin were again taught, spoken, and written, as in the days of Athens and Rome. Regarded as being of the greatest value to mankind, the works of the Greek and Roman writers became known as the *humanities*. Patrons, teachers, and students of the revised school of thought, the *humanists*, as they were called, preferred general culture to highly specialized attainments, and looked on the period of classical antiquity as that of the golden age of great artists, great writers, and great philosophers.

6. **Growth of the Renaissance.**—From Italy the Renaissance movement was carried to France and thence to Spain, where the expulsion of the Moors from Granada, and the discovery of America, had led to an enormous increase of national wealth. From Germany, a country in which the revival of arts and literature had been enthusiastically received, it spread to Scandinavia and Russia. In England its progress, so far as art was concerned,

was much slower than in other countries, as it was not until the reign of Charles I, 1625 to 1649, that the full significance of Renaissance architecture was thoroughly appreciated and understood. But in other respects the introduction of the new learning led to remarkable results. With the exception of Henry VII all the Tudors were scholars, and during the brilliant literary era that followed the defeat of the Spanish Armada the English language began to assume its present form. Poetry, almost unknown since the days of Chaucer, again reigned supreme in the world of art through the genius of Shakespeare, Ben Jonson, Spencer, and Sidney.

7. Geographical Discoveries.—The maritime enterprise of Portugal and Spain led to great geographical discoveries. For instance, the Portuguese navigator Vasco da Gama, rounding the Cape of Good Hope, crossed the Indian Ocean and landed on the west coast of India, whence he returned home with a cargo of Indian merchandise. This venture resulted in the formation of a Portuguese settlement on the coast of Malabar, and the acquisition by Portugal of the eastern trade enabled Lisbon to supersede Venice as the great depot for Indian products.

8. Meanwhile, a Spanish expedition, led by the Genoese navigator Christopher Columbus, who, like Vasco da Gama, was inspired by the hope of discovering a sea route to India, sailed westward and found, not the country he expected to see, but America, the coast of which was subsequently explored by the Cabots, under the auspices of the English Government.

9. Brazil was annexed by Portugal in the year 1500, and twenty years later Magellan, a Portuguese explorer employed by the Spanish, crossed the Pacific and landed at the Philippine Islands. Mexico, discovered in 1518, was conquered for Spain by Ferdinand Cortes, and Peru by Pizarro, in 1533.

10. Changes in the Art of War.—Improvements in the manufacture of gunpowder now enabled the heaviest armour to be pierced and the strongest walls demolished. Thereupon standing armies of infantry and artillery took the place of the feudal levy and changed the whole art of war. This creation of a permanent

army secured for the King a ready means of controlling the turbulence of the nobles by facilitating the siege and destruction of their feudal castles.

11. Formation of the States System.—In the second half of the fifteenth century the monarchs of France, Austria, and Spain, now firmly established, were at length obeyed and feared at home. They thereupon yielded to the love of conquest and sought outlets in other countries for their people's activity. Henceforth the political condition of Europe was that of monarchs fully armed, each of whom was prepared to lead his forces against another country. Hence arose a plan for preserving the balance of power, known as the *States System*, under which any one state was to be prevented from becoming too prominent. International alliances, counter-alliances, and diplomatic relations between European countries also date from this period.

12. The Reformation.—The before-mentioned changes were brought about simultaneously with the *Reformation*, a movement that gave rise to freedom of thought and action in religious matters and led to the secession from the church of Rome of the Teutonic races of Europe.

ITALIAN RENAISSANCE

NOTES ON ITALY

HISTORICAL, ARTISTICAL, AND SOCIOLOGICAL

13. The Separate States of Italy.—In the fifteenth century, and for between three and four hundred years after, Italy was still partitioned into a number of independent states, almost all of which, in turn, fell a prey to foreign invasion or to internecine strife. During this time, owing in a great measure to the absence of a central controlling authority, the princely houses of the various cities acquired increased power and authority, and in several instances small monarchies replaced the old republics. Of the more important states Venice stood almost alone in

preserving its ancient form of aristocratic government, but all power was now concentrated in the persons of three state inquisitors, whose authority was supreme. On the other hand, Florence was ruled by the Medici family, and Pisa by the Duke of Tuscany, while first the Visconti and then, in 1450, the Sforza were enthroned at Milan.

14. Foreign Invasions.—This lack of national unity caused Italy to become a bone of contention between more strongly constituted nations and led to the French invasions of 1494 and subsequent years and to the acquisition of various Italian provinces by Austria and Spain. Toward the end of the seventeenth century, when Savoy and Piedmont were held by France, and in the earlier years of the next century, during which other parts of Italy were subject to Austria and Spain, the political and social life of the people became apathetic and degraded.

15. At the commencement of the fifteenth century Venice, the centre of the commerce of Europe, was at the zenith of her glory and power. Her immense revenues, derived from commercial enterprise, were constantly increasing, while her powerful fleet well maintained the naval supremacy of the Republic. But, owing to the fall of Constantinople, that supremacy was undermined, and by the end of the fifteenth century, through the discovery of the new sea route to India, Venetian commerce was diverted to the Portuguese. The opening of the sixteenth century brought new misfortunes to the once-powerful Republic, and in 1503 the whole of the Morea was ceded to Bajazet II.

16. Later, the League of Cambrai, formed in 1508 against Venice by the Pope, the Emperor, and the Kings of France and Aragon, occasioned further serious losses to the Republic. The wars between the Emperor, Charles V of Spain, and Francis I of France, 1521 to 1530, brought fresh trouble to the state, already weakened by constant struggles against the growing power of the Osmons. By the year 1571 Nauplia, Chios, Paros, and Cyprus were lost, and from now on Venice ceased to be prominent.

17. Dawn of Italian Renaissance.—The first indications of the coming revival of arts and letters in Italy occurred in the

thirteenth and fourteenth centuries. In the former century the sculptor Nicolo Pisano carved his well-known classic reliefs on the pulpits of the Baptistery at Pisa and the cathedral of Siena and in the latter the Florentine poet Dante, 1265 to 1321, wrote the "Divine Comedy." Petrarch, the lyric poet, and Boccaccio, the author of "The Decameron," sought and found the long-forgotten books of Greece and Rome and reproduced the purity and grace of the ancient writers. Following a brief period of decline, art and literature revived at Florence under the fostering care of members of the Medici family, who, having obtained immense wealth through commerce, became generous patrons of arts and literature, prominent politicians, and ultimately occupants of the papal chair.

18. Distinguished Artists and Their Patrons. — Cosimo de Medici, 1389 to 1464, who inherited the great fortune of his father Giovanni, invited to his court many of the Greek scholars driven from Constantinople at the time of its capture by the Turks, and thus gave a fresh impetus to the Renaissance movement, the dawn of which had commenced in Florence some fifty years before. Brunelleschi, 1379 to 1446, one of the earliest of the Renaissance architects of Florence, was a close student of the antique and his successors Leon Battista Alberti, 1404 to 1472, Michelozzi, 1391 to 1472, and other well-known men followed in his footsteps. Among the Florentine sculptors of the period Lorenzo Ghiberti, 1378 to 1455, Luca della Robbia, 1399 to 1482, and Donatello, 1386 to 1466, were the most distinguished. Of the many famous Florentine painters who acted as pioneers of the new movement Masaccio and Filippo Lippi were among the most eminent.

19. Lorenzo the Magnificent, 1448 to 1492, grandson of Cosimo de Medici, liberally expended for the benefit of the state the wealth gained by his private commercial ventures. Under Lorenzo's rule the pre-eminence of Florence in arts and letters was acknowledged by the whole world. Lorenzo founded an academy for young artists in the garden of St. Marco, and it was in this school that Michelangelo received his early artistic training.

20. Influence of Savonarola.—A partial reaction from the state of luxury then prevalent in Florence was brought about in 1490 by the Dominican monk Savonarola, whose prophecies that the day of retribution was at hand seemed likely to be fulfilled under the weak rule of Lorenzo's son Pietro. Among other acts of folly, this weak prince endeavoured to purchase the good will of the French King, Charles VIII, who was then invading Italy, by the surrender of all the fortified places of the Florentine republic. This disgraceful act led to the immediate expulsion of the Medici family from Florence. But when, in 1513, Giovanni de Medici (Leo X) ascended the papal throne, the family returned from banishment and was restored to its former splendour.

21. Florentine Art.—Florentine art reached its zenith about the year 1506, at which period, among other artists, three great masters of the Renaissance, Leonardo da Vinci, Michelangelo, and Raphael, were engaged on important works in Florence. The departure of these three artists, summoned by the Pope to Rome, detracted from the reputation of Florence and checked its further artistic development. Consequently, after the middle of the sixteenth century, Florence produced no architecture worthy of note and the sister arts of painting and sculpture began to decline.

22. Roman Art.—Although the chief credit for the creation of the Renaissance movement rightly belongs to Florence, yet the many splendid examples of ancient art to be seen at Rome undoubtedly fostered the revival of the classic style. Indeed, much of the success of the Florentine artists Brunelleschi and Donatello was due to a close study of the antique architecture and sculpture contained within the walls of the Eternal City. However, with the succession to the papal chair of the humanist Pope Nicholas V, 1447 to 1455, Rome began to assume a prominent position in the realm of art. Among other artistic achievements of the period the imposing Venetian Palace was erected, in the Florentine manner, after a design said to have been supplied by Alberti, then resident in Rome.

23. Henceforth, the encouragement of art was obligatory on the occupants of the papal see ; and succeeding popes, in giving

effect to their building projects, exercised more or less discrimination in the choice of architects. For instance, Pintelli, an architect of mediocre ability, whose best-known work, the Sistine Chapel of the Vatican, owes its attractiveness less to its architectural merits than to its splendid internal decorations, found constant employment under Sixtus IV, 1471 to 1484.

24. The golden age of the Renaissance at Rome commenced with the pontificate of Julius II, 1503 to 1513, to whom and his successor, Leo X, 1513 to 1522, belong the distinction of having associated the immortal names Bramante, 1444 to 1514, Raphael, 1483 to 1520, and Michelangelo, 1475 to 1564, with Roman art.

25. In addition to Bramante, the following architects were employed on various important buildings of this period at Rome : Baldassare Peruzzi, 1481 to 1536, Raphael, Antonio da Sangallo, the younger, and Michelangelo. Peruzzi erected the Farnesina and Palace Massini, Raphael succeeded Bramante as architect of St. Peter's, Sangallo was the original architect of the Farnese Palace and the author of a new plan for St. Peter's, and Michelangelo designed the colonnades in the Farnese Palace, converted the Baths of Diocletian into a church, and constructed the cupola of St. Peter's.

26. During the life of Michelangelo, whose genius was so intimately connected with the artistic activity of the city, the decline of Roman art could scarcely have been considered possible. Yet its decadence was at hand. Once more captured and pillaged, by the troops of the imperial army in 1527, the foreign occupation of Rome led to the dispersal of a large number of artists and thus broke the traditions and continuity of Roman art. Recovering her former position under the pontificate of Sixtus V, 1585 to 1590, the encouragement of art was revived in Rome and many new buildings were erected within the now greatly extended boundaries of the city. But, unfortunately, the degenerate phase of Renaissance, known as the *Baroque*, and exemplified in numerous Jesuit churches constructed in Rome during the latter part of the sixteenth century, set in under the leadership of the architects Maderna, Borromini, and Carlo Fontana.

27. Venetian Art.—As independent of the mainland of Italy in art as in politics, the Renaissance movement did not take root in Venice until the end of the fifteenth century. Consequently, Venetian architects successfully withstood the blandishments of the degenerate Baroque style until a much later period than their brethren in central Italy. The reluctance with which the Renaissance movement was adopted in Venice is shown by the large mixture of Gothic detail found in some of the earlier Renaissance buildings, notably in the internal court of the Ducal Palace. But as the style developed it matured in Venice into one of great richness during the latter part of the sixteenth and in the seventeenth century. Among the chief of the Renaissance architects of Venice were several members of the Lombardi family, the Florentine sculptor Jacopo Sansovino, Sanmichele, Antonio da Ponte, Andrea Palladio of Vicenza, Scamozzi, and Longhena.

28. Veronese Art.—The ancient Roman city of Verona, once the capital of a powerful province, passed, in 1405, into the hands of the Venetians, to whom it remained subject down to the end of the Republic. That Verona played an important part in the architecture of the Renaissance in Italy is clearly shown by the many fine examples of the Early period that are to be seen in that city. Moreover, Verona is distinguished as being the birthplace of Fra Giocondo, 1435 to 1514, one of the early pioneers of the classic revival and a famous architect of his time, and also as the home of Michele Sammicheli, 1484 to 1559, the great military architect of Upper Italy whose palatial buildings at Verona are characterized by excellent proportions, good detail, and an appearance of strength and solidity it would be difficult to surpass. But Sammicheli's greatest work was his masterly plan for the fortification of his native city, and the gateways he constructed in connection with this scheme of defence are among the finest and most appropriate of their kind.

29. Palladio's Works.—Vicenza, another town of the eight provinces of Venetia, is notable as the birthplace of Andrea Palladio, 1518 to 1580, the last great architect of the Italian Renaissance. Palladio's finest churches, such as the Redentore, are to be seen in Venice, but there are numerous examples of his

palatial buildings at Vicenza. As a close student of the antique and one of the most learned architects of his time, Palladio's buildings show a remarkably fine feeling for proportion, combined with detail at once varied, refined, and effective. His device of grouping two stories of a building under one colossal order has been frequently copied by later architects of all countries and times. Palladio's finest architectural work at Vicenza is the great arcade, two stories in height, enclosing the ancient basilica of that city.

30. Proficiency of Italian Artists.—The versatility of the artists of the Renaissance in Italy was nothing short of marvellous. Many were almost equally proficient in painting, sculpture, and architecture, and to a profound knowledge of the arts were sometimes added the powers of the soldier, scholar, and poet. Never since the days of Pericles had there been a period in which the cults of art and literature were so successfully developed or one that produced so many artists and scholars capable of giving effect to the highest ideals.

31. Social Corruption.—But there was a certain phase in the civic life of the time which it has always been difficult to reconcile with the civilizing influence of the great classic revival. Among the princes of the states a genuine admiration for art and learning and other refinements of life was often combined with a cruel, revengeful, and utterly unscrupulous disposition. Thus, many of the petty sovereigns, men of culture and high intellectual attainments, who by the exercise of lavish generosity did so much for the arts and artists, literature and scholars of their day, had no hesitation in making use of hired assassins to compass the destruction of political or personal foes.

32. While living under a veneer of ultra-refinement, culture, and religion, for the strict observance of religious obligations was seldom omitted, the munificent art patrons of the Italian Renaissance were sometimes the instigators of crimes of appalling cruelty. Thus, the splendid halls of the palaces, profusely adorned with paintings and priceless statues of ancient Greece and replete with all the luxuries that culture could suggest or money buy, were

often the scenes of political intrigues, sinister plots, and sudden deaths.

33. The dual nature of the lives of the owners of the palaces was reflected in the streets of the stately Italian cities, rich in magnificent churches and fine civic buildings, and permeated with that intense enjoyment of life that was so remarkably characteristic of the Renaissance period. For here, too, there were constant changes from the peaceful pageantry that marked an important festival to sudden civic riot and confusion, from religious processions to dastardly assassinations.

ARCHITECTURAL PERIODS

DISTINCTIVE FEATURES

34. Classification of Periods.—The architecture of the Renaissance in Italy can be divided into four distinct phases or periods comprising (a) the *Early period*, extending through the greater part of the fifteenth century and characterized by the general acceptance of the architectural traditions and the reproduction of the structural and decorative elements of Roman art; (b) the *Middle*, or *Classic, period*, which reached its height during the first half of the sixteenth century and is distinguished by the fidelity with which the proportions, intercolumniations, mouldings, and other details of the ancient orders were copied and applied to buildings of diverse form and nature; (c) the *Baroque period*, which, lasting from about 1550 to 1600, saw the commencement of the decline of the Renaissance; and (d) the *Rococo period*, during which Renaissance art reached its lowest depth of degradation.

35. Early Period.—The style followed, or rather suggested, in Brunelleschi's magnificent dome at Florence, for although classic in spirit antique forms are not found in the details of the design, led to further and more fully developed efforts to revive classic art in Florence. These efforts resulted in the application of the architectural details of ancient Roman buildings to the palaces and other civic structures of the time. However, despite

the use of classic features the influence of the mediaeval castellated dwelling can be traced in the Florentine palaces of the Early Renaissance. This influence is exemplified in the strength and solidity of the immense rectangular façades in which the free use of heavy rusticated masonry and the smallness of the well-protected window openings of the lower floor suggest that the palaces were designed with a view to the protection of the inmates during the frequent civic tumults. The upper stories of the palatial buildings were usually clearly defined by horizontal lines of mouldings and the fronts crowned with boldly projecting classic cornices.

36. Middle, or Classic, Period. — Ornamentation was only sparingly applied, but the value of good proportion, symmetry, and regularity of wall spacing was fully recognized. Later examples of Florentine palaces are less monumental and massive in appearance. Classic pilasters in superimposed stages were common in the more fully developed periods of the architectural style, and the windows were frequently embellished with pediments supported by small columns or narrow pilasters.

37. The secular buildings of the early Renaissance at Rome are of later date and less severe and fortress-like in character than those of Florence. Notable examples of early Roman palaces are seen in Bramante's fine Cancellaria and Palazzo Giraud, 1506. The upper wall surface of the façades of these buildings is broken by slightly projecting pilasters supporting cornices of small projection. To Michelangelo, one of the architects of the finest palace in Rome, that of the Farnese, belongs the distinction of the introduction of the column in preference to the pilaster for the adornment of walls and of the stronger and more boldly designed mouldings that marked the Middle period of the Roman Renaissance.

38. In Rome, as elsewhere, the buildings of the later Renaissance had neither the monumental simplicity of the Early period nor the mature excellence of the Middle period. Few of the eighteenth-century buildings of Rome are of a high order of architectural merit, although the extravagancies of the Baroque and



Rococo phases are not so much in evidence there as in other parts of Italy.

39. The Baroque and Rococo Periods.—The decline of Renaissance art was manifested by a general tendency to disregard the traditional rules regulating the use of the orders and thus break away from the severe classic formalism of the Middle period. These tendencies, particularly observable in the buildings of the seventeenth century, are shown by a profusion of, generally, badly designed ornamentation, by the irregularities of form presented in the pediments of the period, characterized by the free use of curved instead of straight lines, and by the absence of the restraining influences of severity and refinement.

ARCHITECTURAL EXAMPLES

FLORENTINE RENAISSANCE ARCHITECTURE

40. Riccardi Palace.—Although named after its later owners, the Riccardi Palace, Fig. 1, is of special interest as having been

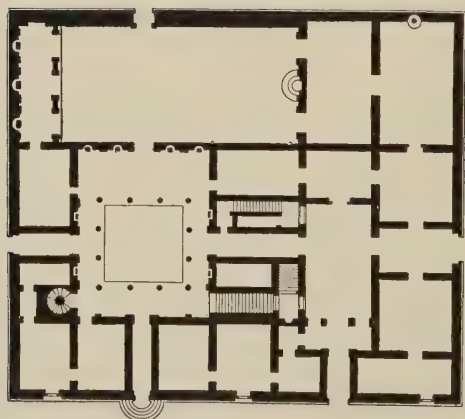


FIG. 2. PLAN OF RICCARDI PALACE, FLORENCE

the old home of the Medici family, for whom it was erected about 1430 by the architect Michelozzi. Its external aspect is, perhaps, rather stern and forbidding, notwithstanding the monumental dignity and good proportions of the façade. Architecturally, the composition includes a heavily rusticated

ground floor over which is a two-storied structure crowned with a boldly projecting classic cornice. The influence of mediaeval

art is shown in the semicircular-headed windows, divided into two lights by small columns of the upper floors. On reference to the plan, shown in Fig. 2, it will be seen that an imposing gateway leads to the principal inner arcaded court round which the chief rooms of the palace are ranged. This gateway, which is not centrally placed in the façade, is balanced by another giving access to the secondary court.

41. Church of St. Spirito.—The church of St. Spirito, designed by Brunelleschi, 1379 to 1446, is illustrated in plan in Fig. 3. Carried out many years after the death of its author, the design was much modified in execution. Its plan comprises a Roman basilica, arranged in the form of a Latin cross. The aisles, separated from the nave by rows of Corinthian columns supporting detached portions of entablatures and semicircular arches, are continued round the transepts and choir. There is a low dome, carried on pendentives, above the crossing; the aisles are vaulted, but the nave has a flat panelled ceiling, as shown in the interior view of the church, Fig. 4.

42. Pitti Palace.—The Pitti Palace, the exterior of which is illustrated in Fig. 5, was designed by Brunelleschi about the year 1435 for Luca Pitti, the powerful opponent of the Medici family. In its fortress-like severity the Pitti Palace resembles the Riccardi, but the wall surfaces, broken by heavily rusticated pilasters continued through two floors, are not so well graduated as in Michelozzi's building. In addition, the size of the main cornice

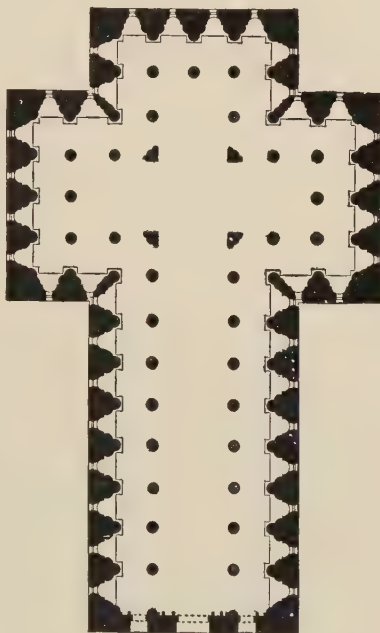


FIG. 3

PLAN OF CHURCH OF ST. SPIRITO, FLORENCE



FIG. 4. INTERIOR OF CHURCH OF ST. SPIRITO, FLORENCE



FIG. 5. PITTÌ PALACE, FLORENCE

is inadequate for the proportions of the façade, the length of which is 475 feet and the height 114 feet.

43. Church of St. Andrea, Mantua.—The church of St. Andrea, a plan of which is shown in Fig. 6, is perhaps one of the best examples of the work of the great Florentine architect Leon

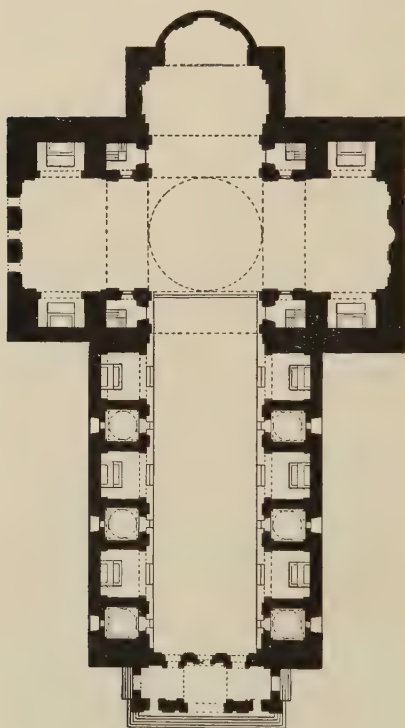


FIG. 6
PLAN OF CHURCH OF ST. ANDREA, MANTUA

Battista Alberti, 1404 to 1472. In the structural form of this church, as in its decorative details, the influence of the architecture of ancient Rome is clearly discernible. Its plan, cruciform in shape, consists of a wide nave covered with a barrel vault supported on massive arched piers, the intervening spaces of which are filled with side chapels, north and south transepts, and an apsidal east end. The dome at the crossing is carried on pendentives. Externally, the white marble façade of the church comprises an entrance porch of three bays, of which the wide central opening is carried to a considerable height and finished with a semicircular head. The

openings in the narrow side bays are simply low doorways. Corinthian pilasters of slight projection mark the vertical divisions of the bays and support the entablature and pediment.

44. Strozzi Palace.—The Strozzi Palace, Fig. 7, designed by Benedetto da Majano in 1489 for Filippo Strozzi, was not completed until 1553. Its court and the celebrated cornice copied from an ancient Roman model, but enlarged to suit the scale of

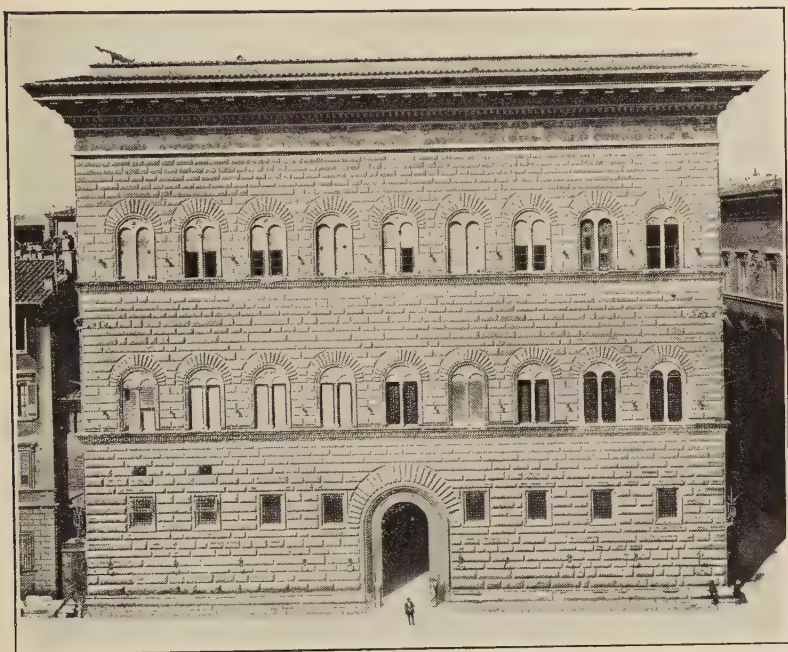


FIG. 7. STROZZI PALACE, FLORENCE

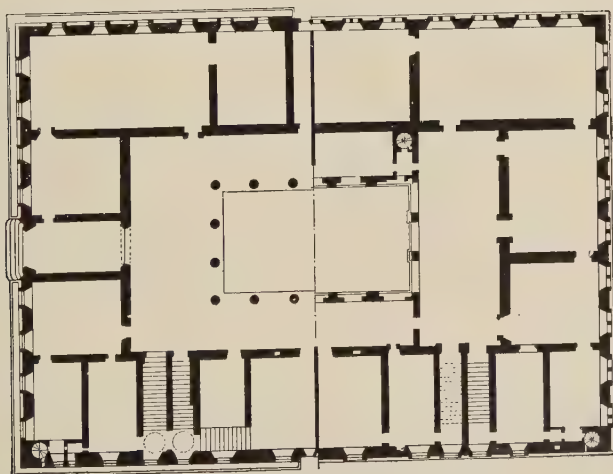


FIG. 8. PLAN OF STROZZI PALACE, FLORENCE

the Florentine building, were designed by Cronaca. The plan of this palace, shown in Fig. 8, which combines half-plans of the ground and first floors of the building, is almost perfect in the symmetry and balance of its component parts. Architecturally, the façades follow the general scheme of design employed at the Riccardi Palace, but with a less successful result.

45. **Pandolfini Palace.**—The front of the Pandolfini Palace, shown in Fig. 9, is a building said to have been designed by Raphael, 1483 to 1520, although its construction was not commenced until some years after the artist's death. Apart from



FIG. 9. PANDOLFINI PALACE, FLORENCE

the wing building, which detracts from the continuity and harmony of the design, the small façade, 75 feet long and about 50 feet high, presents a very dignified and pleasing appearance. On comparing this palace with earlier buildings of the same type it will be noticed that the ponderous effect produced by

the too liberal use of rusticated walling, as in the examples, shown in Figs. 1, 5, and 7, has been most judiciously avoided ; and that mullioned windows, common in other earlier examples of Florentine palace architecture, have here been discarded in favour of rectangular openings crowned with pedimented heads.

46. Palazzo Vecchio.—The Palazzo Vecchio, or Old Palace of Florence, originally the seat of the *Signoria*, or government of the republic, and afterwards the residence of Cosimo I, was



FIG. 10. CORTILE OF PALAZZO VECCHIO, FLORENCE

erected in 1298 by Arnolfo di Cambio. Fig. 10 shows the interior court constructed by Michelozzi in 1432. In the central fountain the well-known figure of a boy with a fish rises above a large basin of porphyry. The elaborate arabesques of the columns were added in 1565. The various armorial bearings placed in the spandrels of the arches include those of Florence, the People, and the Medici.

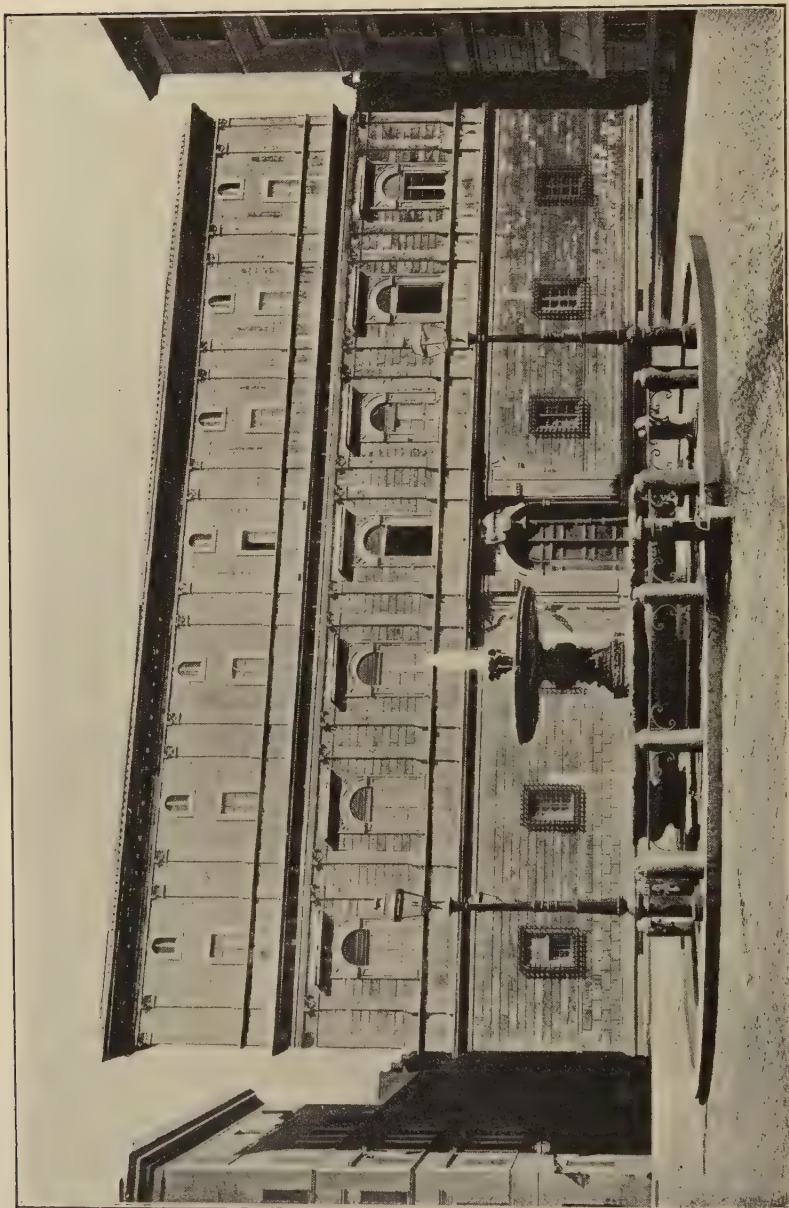


FIG. 11. GIRAUD PALACE, ROME

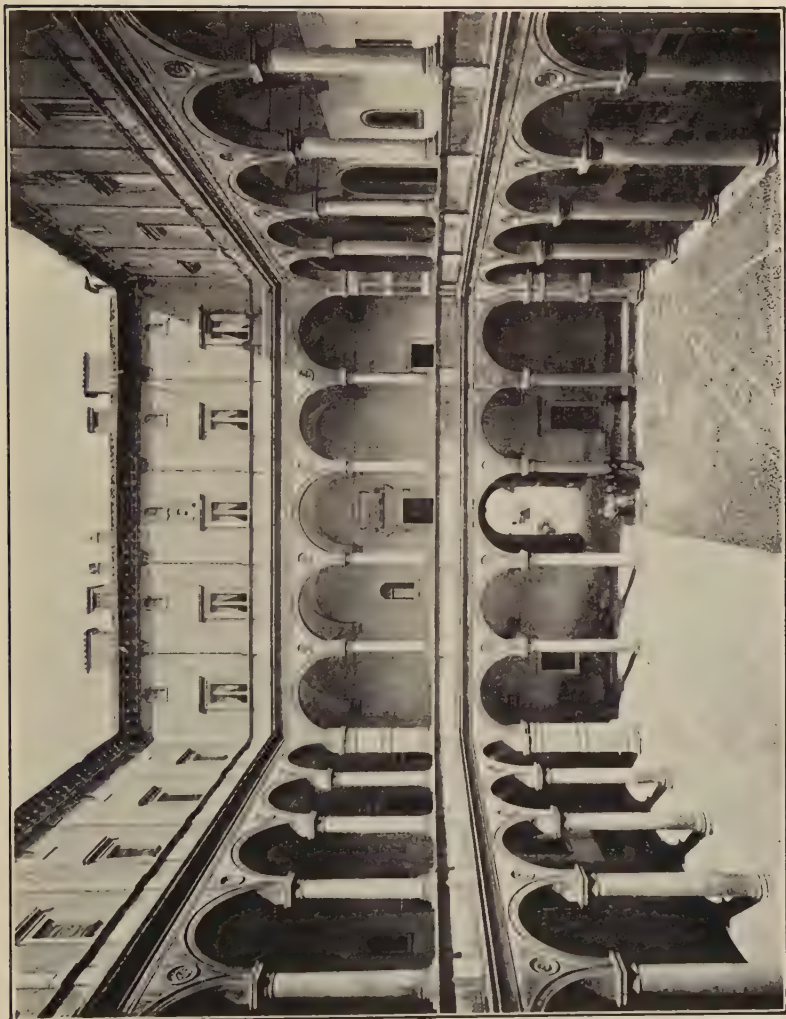


FIG. 12. CORTILE OF CANCELLARIA PALACE, ROME

ROMAN ARCHITECTURE

47. **Giraud Palace.**—Designed by Bramante and erected at the commencement of the sixteenth century, the façade of the Giraud Palace at Rome, Fig. 11, is divided into three stages, of which the lower one is rusticated and the upper ones relieved by coupled projecting pilasters placed between the windows. The main cornice is not properly proportioned to the height of the façade and the pilasters are too slight and delicate to form a sufficient contrast with the walling. But the result of the architect's close study of ancient models is noticeable in the general refinement and purity of the details of the building.

48. **Cortile of the Cancellaria Palace.**—Fig. 12 illustrates by a general view the internal court, or *cortile*, of the great Cancellaria Palace at Rome, usually regarded as one of Bramante's most successful works.

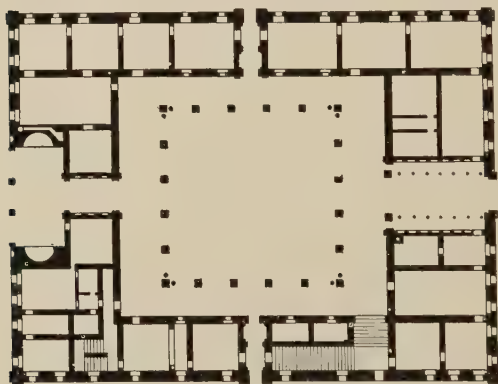


FIG 13. PLAN OF FARNESE PALACE, ROME

The vaulted arcade of this court, two stories in height, supports an upper story and a small attic, the overhanging stages being grouped together

by means of pilasters spaced to enable their centres to coincide with those of the arcading. It will be noticed that the semi-circular arch of the arcading rests directly on the abacus of the supporting column. The façade of the Cancellaria Palace, a huge structure measuring 300 feet in length and 85 feet in height, bears a very close general resemblance to that of the smaller Palazzo Giraud, Fig. 11, designed by the same architect.

49. **Farnese Palace.**—The Farnese Palace at Rome, a plan of which is shown in Fig. 13, consists of a large arcaded inner court,



FIG. 11. FARNESE PALACE, ROME

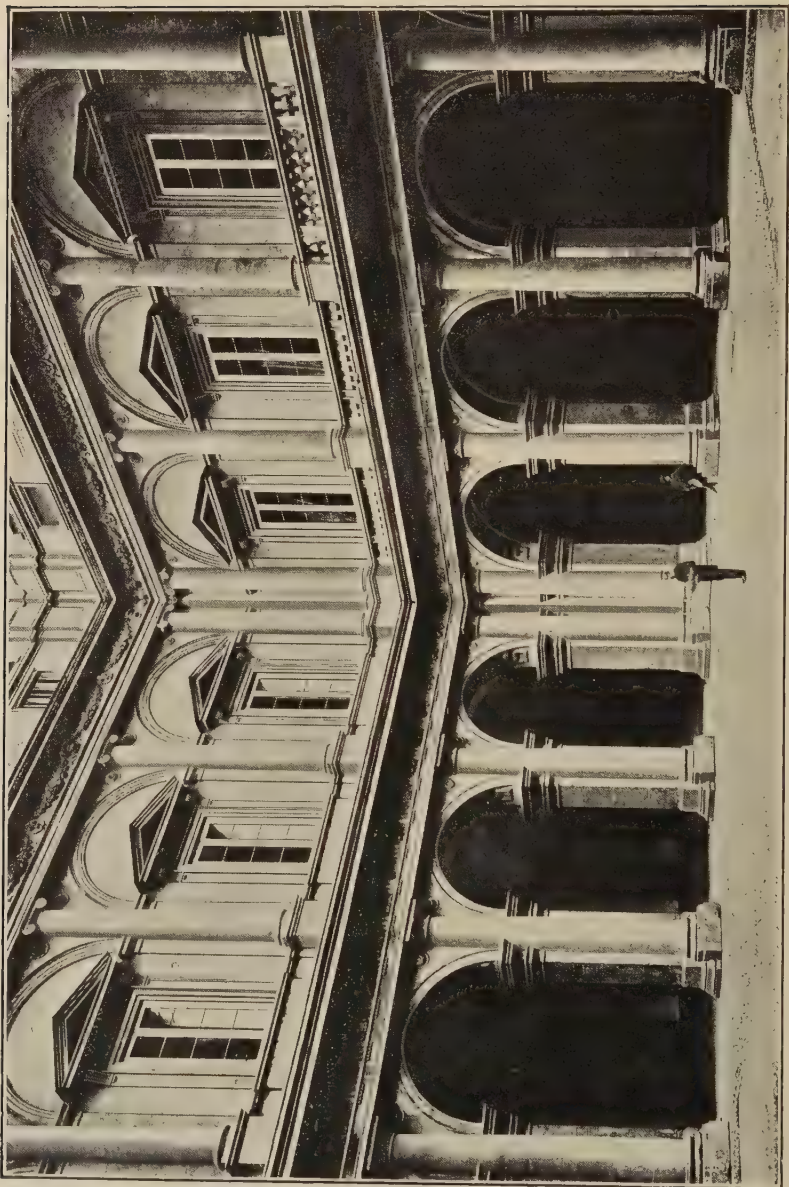


FIG. 15. CORTILE OF FARNESE PALACE, ROME

90 feet in length each way, enclosed by symmetrically designed façades containing three stories in addition to a low basement floor, as shown in Fig. 14. Designed by Antonio da Sangallo the younger, the building was commenced in 1530 and partially erected under the superintendence of that architect. But ultimately the work passed into the hands of Michelangelo, who is said to have been responsible for the beautifully proportioned main cornice that forms one of the most striking features of this admirably designed building. The dignity of the garden front of the Farnese Palace is marred by the insertion of a central composition by Giacomo della Porta, consisting of a central arcade continued through the three stories of the façade. On the top floor the upper arches of this arcade cut into and break the continuity of the main entablature with the most disastrous result. The fine triple-arcaded entrance and the arcaded cortile embellished with Doric and Ionic orders, Fig. 15, are attributed to Sangallo.

50. St. Peter's, Rome.—The suggestion to rebuild the church of St. Peter at Rome seems to have originated with Pope Nicholas V, 1447 to 1455, under whom the old basilica which had been in existence since the time of Constantine was partially demolished and the erection of a larger church commenced. But the death of the humanist pontiff shortly after the commencement of the work of reconstruction brought the project to an end, and it was not until the pontificate of Julius II, some fifty years later, that the proposal to rebuild the church was accidentally revived.

51. Bent on the erection of a monument to himself during his lifetime, Julius had instructed Michelangelo to construct a splendid tomb. The monument had, however, been designed on so colossal a scale that there was no church then in existence large enough to receive it, and he therefore determined to proceed with his predecessor's scheme for rebuilding St. Peter's in a much enlarged form.

52. Bramante, then at the height of his fame, was commissioned by the Pope to prepare designs for the new church, the foundation stone of which was laid in 1506. It was intended

that the plan of the church should be in the form of a Greek cross with apsidal arms, the square outline being preserved at the

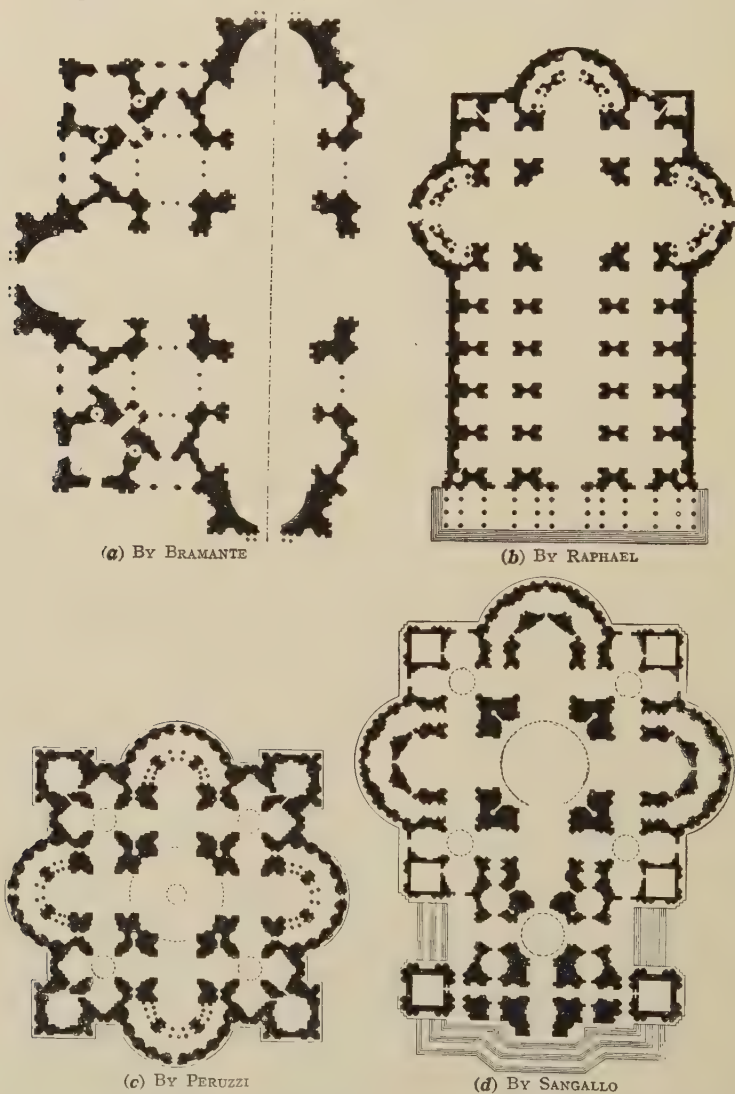


FIG. 16. PROPOSED PLANS OF ST. PETER'S, ROME

angles by four chapels terminating in cupolas and open loggias,

and the whole structure crowned with a huge central dome, Fig. 16 (*a*). Unfortunately, the majestic simplicity of this fine conception was not adhered to in the subsequent execution of the work, and many alterations were made in the design after Bramante's death in 1514.

53. Fig. 17 (*a*) illustrates Bramante's design for the central dome of St. Peter's, from which it will be seen that the lower portion of the drum, a half-plan of which is shown at (*b*), consists of an immensely thick wall carrying the outer order of Corinthian columns that encircles an inner wall pierced with eight wide openings and adorned with pilasters and columns. The dome, which is spherical in form, and in other respects suggestive of that of the Pantheon, terminates in a well-designed lantern.

54. On the death of Bramante the control of the work passed into the hands of Raphael, Giuliano da Sangallo, and Fra Giocondo. It was at this period that signs of weakness appeared in the great piers constructed to support the weight of the dome. During Raphael's connection with St. Peter's, which did not terminate until his death in 1520, he seems to have prepared a plan for completing the building in the form of a Latin cross, Fig. 16 (*b*).

55. Baldassare Peruzzi, the next director of the works, at once determined to abandon the Latin-cross plan and to reduce the building to the form proposed by Bramante, namely, a square enclosing a Greek cross, Fig. 16 (*c*), but owing to the troublous times little progress was made before Peruzzi's death in 1536. His successor, Antonio Sangallo, carefully restudied the whole design and made a large scale model of his scheme. Adopting Peruzzi's, or rather Bramante's, Greek-cross plan as the basis of the design, he added an immense portico, measuring 450 feet from north to south and 150 feet from east to west, with which he incorporated two lofty towers, Fig. 16 (*d*).

56. Sangallo's design for the dome of St. Peter's is shown in Fig. 17 (*c*). It comprised two stages of arcading surmounted by a hemispherical dome of rather depressed outline and a huge lantern. None of Sangallo's proposals appear to have been

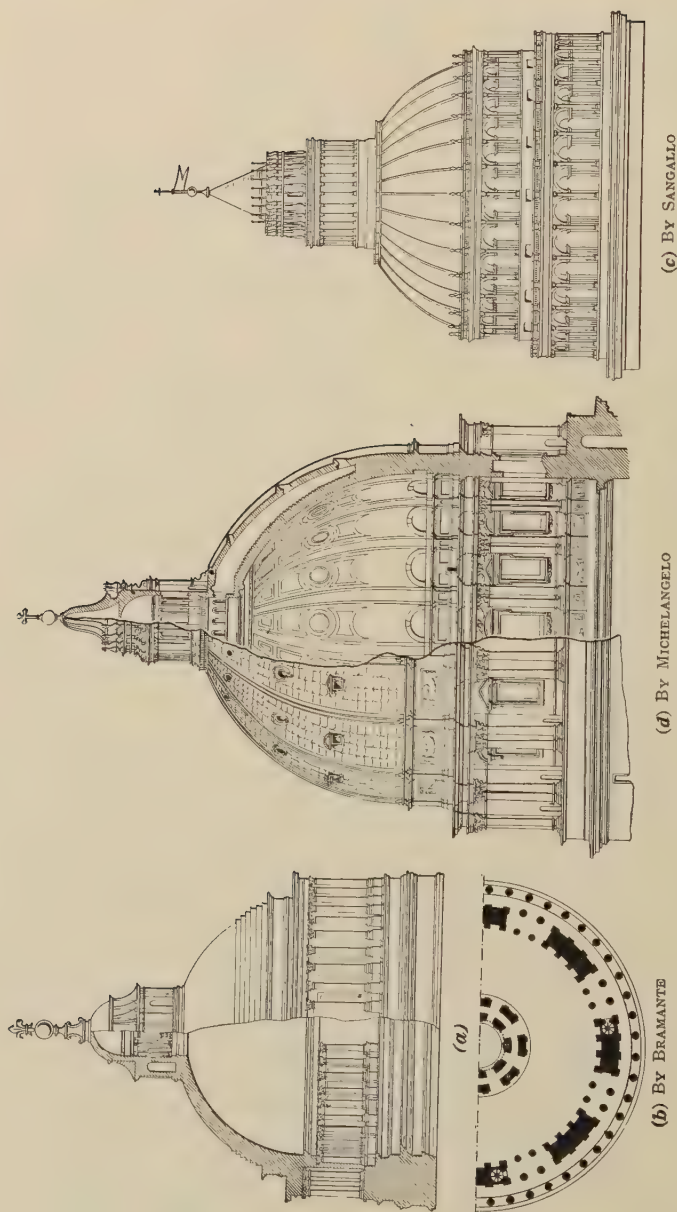


FIG. 17. DESIGNS FOR DOME OF ST. PETER'S, ROME



FIG. 18. FAÇADE OF ST. PETER'S, ROME

carried out. Indeed, all his time and all the funds at his disposal were needed in making good the defective construction of some of his predecessors and in strengthening the piers at the crossing.

57. At Sangallo's death in 1546 Michelangelo assumed control

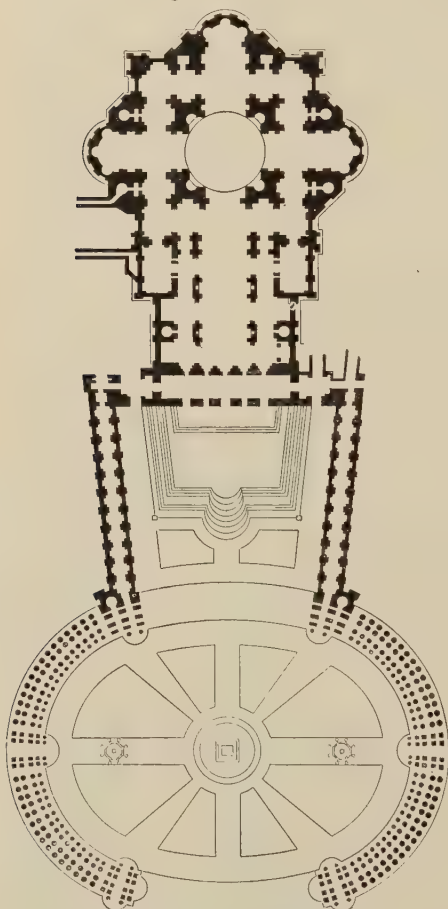


FIG. 19. PLAN OF PIAZZA OF ST. PETER'S, ROME

of the works, and although no great alteration was made in the general plan of the building, the form of the aisles was simplified and the multiplicity of parts greatly reduced throughout the whole structure. At the time of his appointment as architect of St. Peter's Michelangelo was 72 years of age, and at his death in 1564 he had the satisfaction of seeing his design for the stately dome, Fig. 17 (*d*), well advanced toward completion.

58. After the death of Michelangelo the completion of the building was entrusted to Vignola, Pirro Ligorio, and Giacomo della Porta. The drum of the dome had been finished under Michelangelo, who had prepared drawings and

models for the completion of the upper part, and this magnificent crowning feature of the building was added in accordance with the great master's proposals. But contrary to Michelangelo's well-known intention, Paul VI, in 1606, caused the nave of the

church to be lengthened and commissioned Carlo Maderna to design the present weak and unsuitable façade, Fig. 18. The magnificent piazza, with its circular porticoes and fountains, shown in Fig. 19, was completed by Bernini about the year 1661.

59. Externally and internally, the architectural effect of St. Peter's is marred by the colossal scale adopted for the constituent parts of the design, which dwarfs the vast dimensions of the church. For example, the gigantic Corinthian order shown in the view of the façade, Fig. 18, is raised on a podium 15 feet high and extends vertically from the base to the top of the cornice to a height of 108 feet. Above the cornice the attic story rises an additional 39 feet, and thus, owing to the immense height of the external walls, 162 feet in all, the beautifully designed drum of the dome, Fig. 17 (*d*), is more or less concealed from view.

60. As finally completed, the plan of St. Peter's, Fig. 19, consists of a large vestibule or porch, a nave, and aisles of four bays, a large open central space bounded by the huge piers that support the dome, spacious transepts, and an apsidal east end. The well-lighted interior, shown in Fig. 20, is richly decorated with mosaics and coloured marble.

61. Michelangelo's dome, probably the most beautiful creation of the Renaissance period, rises, from the pavement to the summit of the lantern, to a height of 405 feet. Its internal diameter is nearly 140 feet. The largest and most imposing, if not the most beautiful, church in existence, St. Peter's covers an area of 18,000 square yards. Its vast size can only be realized by comparing its floor space with the areas of other large churches, such as Milan Cathedral, with 10,000, St. Paul's, London, with 9,350, St. Sophia at Constantinople, with 8,150, and Cologne Cathedral, with 7,400 square yards of floor space.

62. St. John Lateran, Rome.—The ancient church of St. John Lateran, rebuilt in the tenth century in the form of a basilica with a nave and double aisles, retained its primitive front until the year 1734, when the present façade, illustrated in Fig. 21, was constructed by Alessandro Galilei. This picturesque composition consists of a huge portico 196 feet long and 33 feet wide

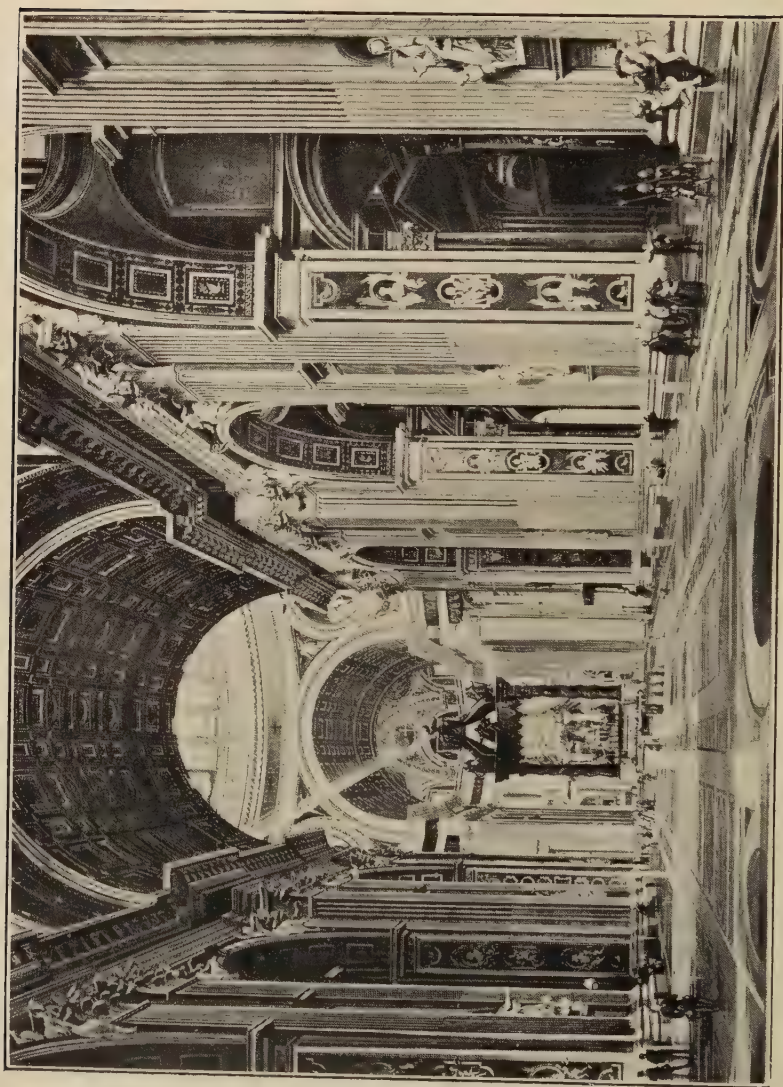


FIG. 20. INTERIOR OF ST. PETER'S, ROME

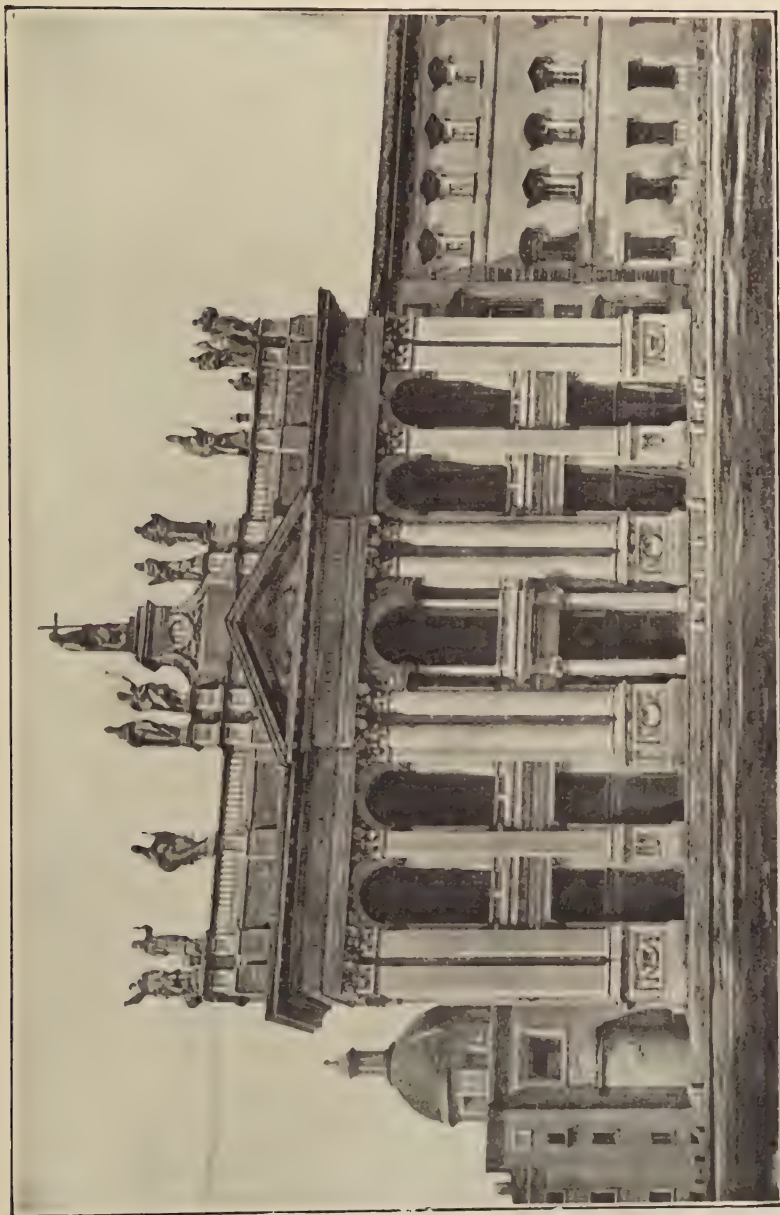


FIG. 21. ST. JOHN LATERAN, ROME

surmounted by an open arcaded loggia from which the popes were accustomed to deliver the benediction on Ascension Day. Colossal pilasters and columns raised on lofty pedestals support a well-designed entablature, but the crowning balustrade is far too high, and the sculptured figures are neither satisfactorily proportioned nor well grouped.

63. Palace of Caprarola.—The lofty Palace of Caprarola, designed by Vignola, 1507 to 1573, for Cardinal Alexander Farnese, nephew of Paul III, and probably the greatest work of its talented architect, is one of the most magnificent dwellings of the Renaissance period. From its plan, Fig. 22, it will be seen that suites of rooms are arranged in an outer pentagonal-shaped

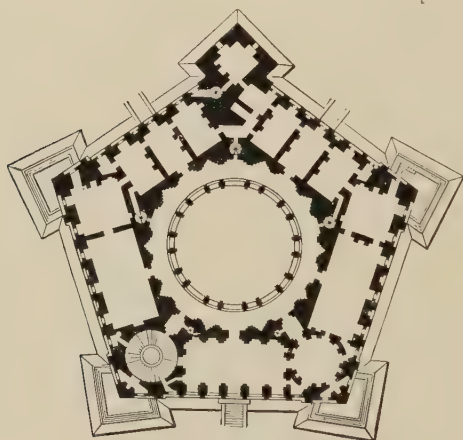


FIG. 22. PLAN OF PALACE OF CAPRAROLA, ROME

structure enclosing a circular court. Each of the five sides of the building is about 130 feet in length and the internal court is 65 feet in diameter. The fortress-like appearance of the palace, Fig. 23, is enhanced by bastions formed at the angles of the building and incorporated with the raised terrace on which the structure stands.

Above the terrace the two upper stories of the palace rise to a height of about 60 feet. The total height of the building, including the basement, or terrace entrance, is about 160 feet. The beautiful gardens are embellished with fountains and statues.

64. Villa Medici.—The splendid Renaissance country mansion now known as the Villa Medici was erected in 1540, after designs by Annabille Lippi, for Cardinal Ricci de Montepulciano. Some sixty years later the mansion came into the possession of the

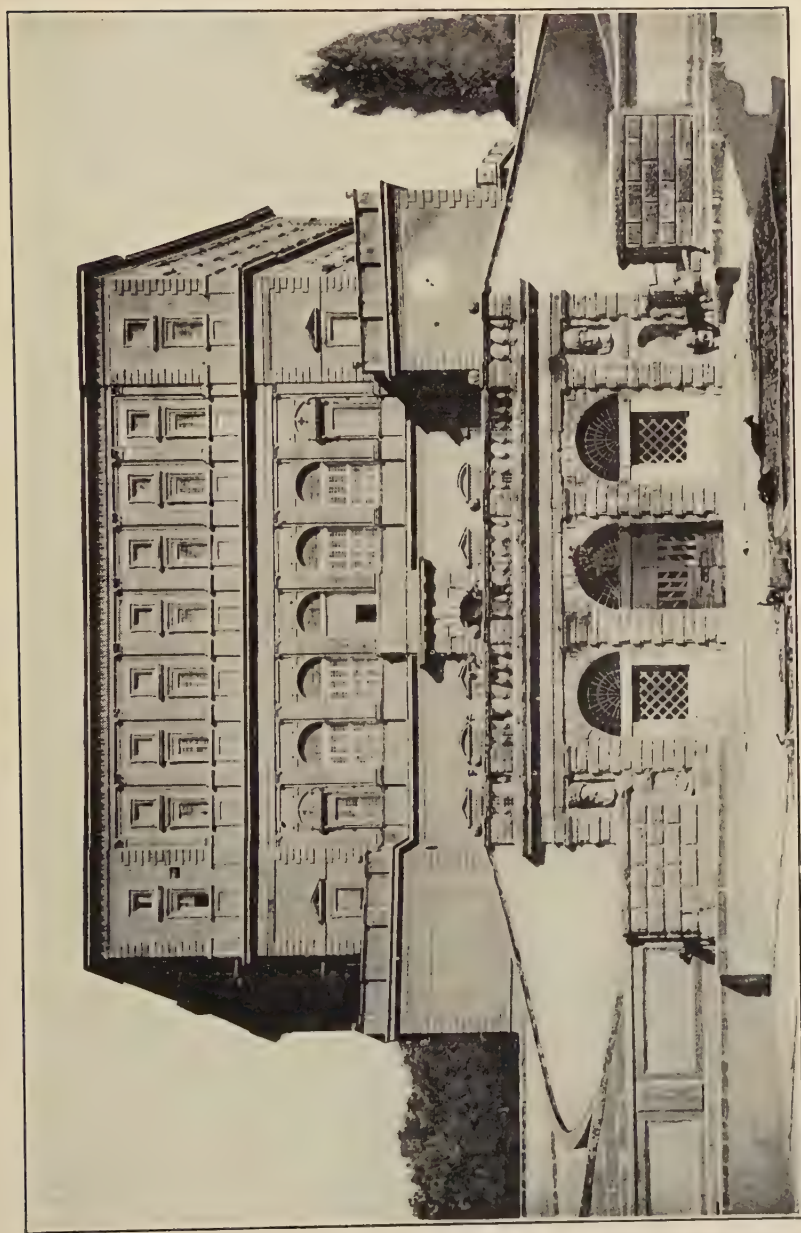


FIG. 23. PALACE OF CAPRAROLA, NEAR ROME

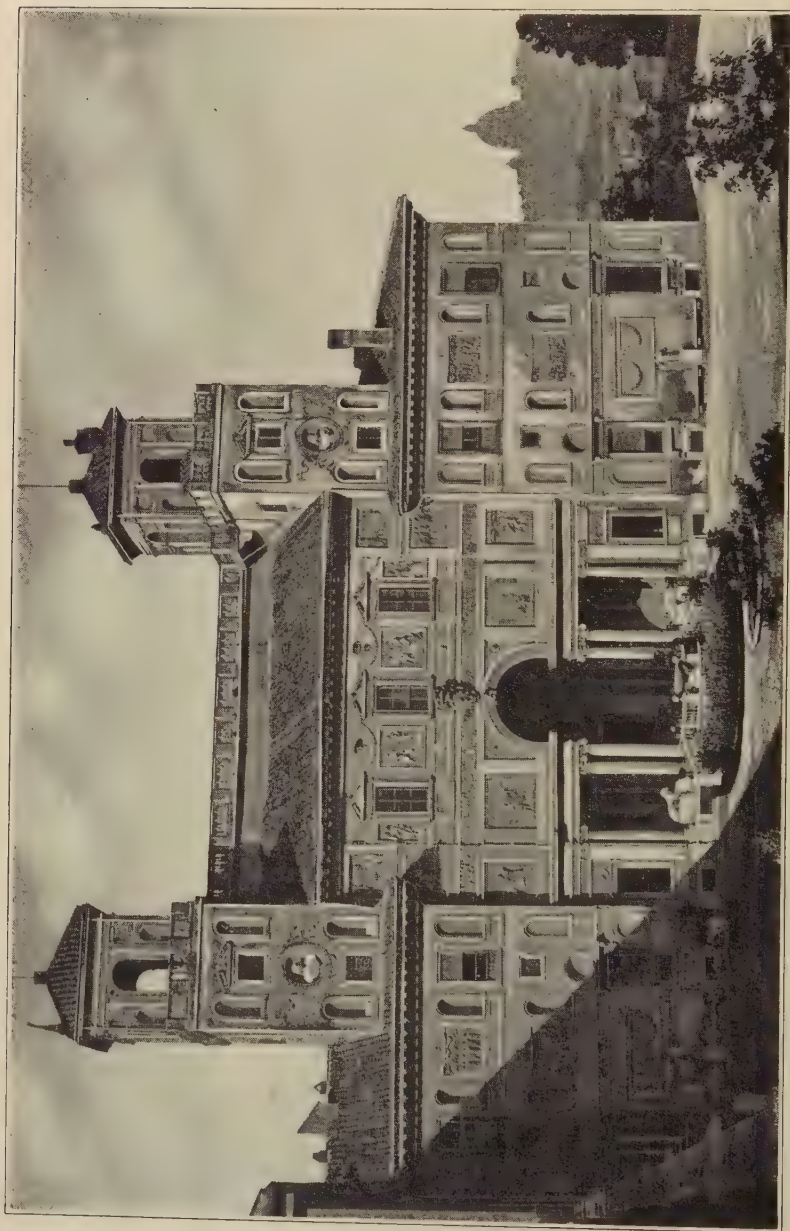


FIG. 24. GARDEN FRONT OF VILLA MEDICI, ROME

Medici family, by whom it was enlarged and lavishly adorned with antique statues and bas-reliefs. The French academy of art, founded by Louis XIV, was transferred to the Villa Medici in 1801. Unlike most of the Roman palaces, the Villa Medici has no internal court. Its plan, L shape in form, comprises the main structure, the garden front of which is shown in Fig. 24, and a long narrow wing building placed at right angles to the chief façade.

VENETIAN ARCHITECTURE

65. Vendramine Palace.—The Vendramine Palace, the façade of which is illustrated in Fig. 25, is one of the earliest of the many fine Renaissance palaces that line the Grand Canal or main artery



FIG. 25. VENDRAMINE PALACE, VENICE

for traffic of Venice. Designed by Pietro Lombardi in 1481, the arrangement of its wall openings and the strongly defined horizontal divisions between the different stories of the long unbroken

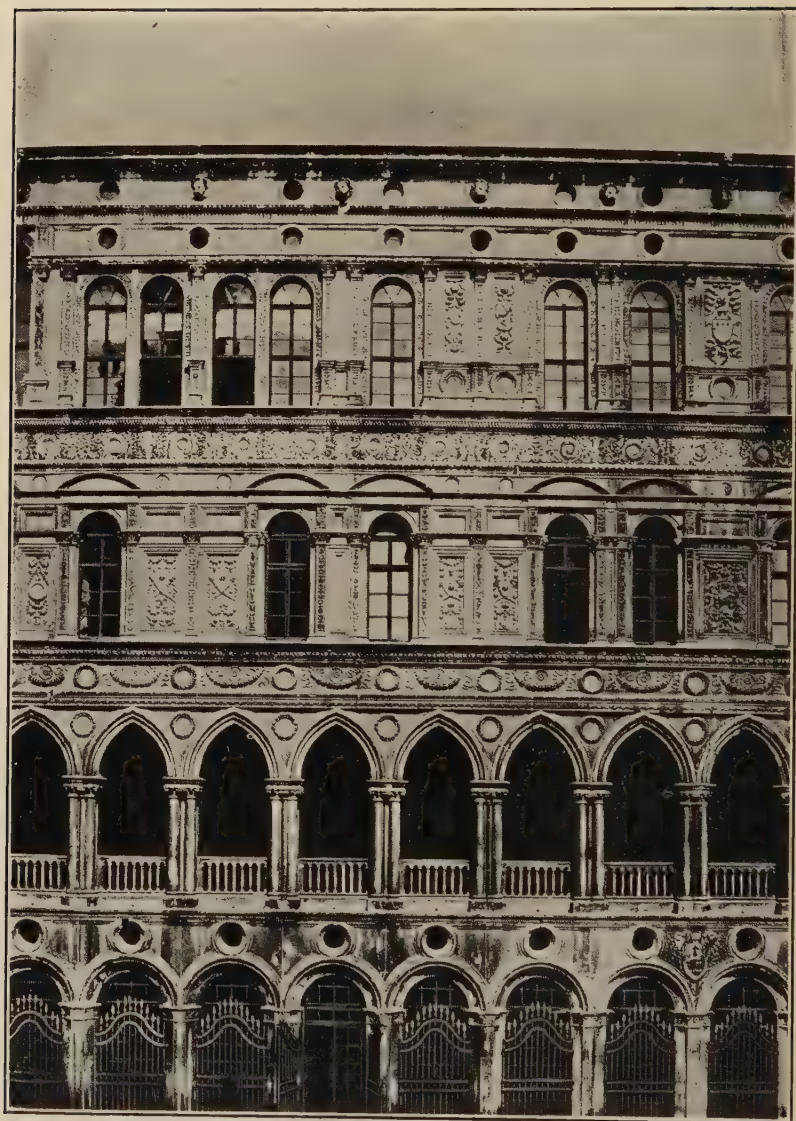


FIG. 26. DUCAL PALACE, VENICE

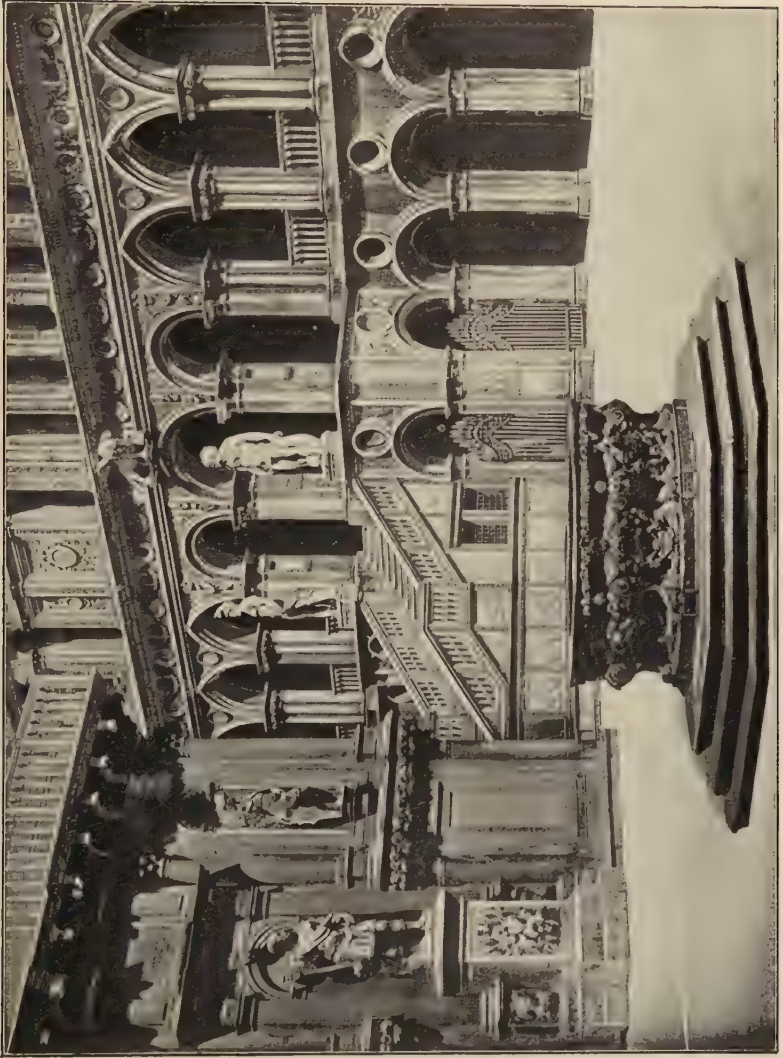


FIG. 27. STAIRCASE OF DUCAL PALACE, VENICE

front, crowned with a deep entablature, are all characteristic features of an early Renaissance palace. But in this structure, as in many others of its period, the windows, consisting of circular-headed double openings grouped under a single arch, clearly show the influence of mediaeval art.

66. Ducal Palace.—The local characteristics of the early Renaissance palace architecture of Venice are well exemplified in the façade, Fig. 26, rebuilt in 1480 to 1490 by the architect Antonio Riccio of Verona, at the east side of the Court of the Ducal Palace. This long front, emphasized horizontally by deep and elaborately enriched friezes, consists of two open arcaded lower and two walled upper floors. The ground-floor arcade, comprising a series of semicircular-headed openings and splayed and panelled piers, is a very pleasing example of rich early Renaissance design. But the upper arcade, composed of pointed arches and clustered column supports of mediaeval character, is a very incongruous if, in itself, an interesting feature of the design. The round-headed windows of the upper floors are flanked by pilasters and the panelled faces of the intervening wall spaces profusely enriched.

67. The stately flight of steps, known as the Giant's staircase, leading to the first floor of the Ducal Palace, is shown in Fig. 27. This beautiful staircase derives its name from the colossal statues of Mars and Neptune, sculptured by Sansovino in 1554, that flank the head of the stairs, where it will be noticed that the continuity of the pointed arcade is broken by three semicircular arches. One of the two fine bronze cistern heads, placed in the centre of the court and dating from the middle of the sixteenth century, is shown in Fig. 27.

68. Cornaro Palace.—The façade of the Palazzo Cornaro, or Cornaro Palace, Fig. 28, designed by Sansovino in 1532, consists of a rusticated ground floor with a small mezzanine floor above and two lofty upper stories, the semicircular-headed windows of which are formed between coupled columns raised on pedestals. The wide frieze of the main entablature is pierced with small oval-shaped openings to admit light to the attic floor.

69. Library of St. Mark.—This magnificent structure, Fig. 29, designed by Sansovino in 1536, is one of the finest secular buildings in Italy. The building comprises a lower colonnade of the Doric order supporting an upper floor the large semicircular-headed windows of which are flanked by Ionic columns. One of the least satisfactory parts of the composition is the depth of the frieze of the main entablature, shown in detail in Fig. 37 (c), which is



FIG. 28. CORNARO PALACE, VENICE

extended far beyond its proper proportion to obtain room for the small oblong windows that light the concealed upper story. The spandrels of the semicircular arches are filled in with sculptured figures, and the general ornamentation is rich and varied in character.

70. The Mint.—A portion of the old mint, *La Zecca*, appears in Fig. 29 at the left of the Library of St. Mark's. Designed by Sansovino in 1536, the solid-looking façade comprises a rusticated



FIG. 29. LIBRARY OF ST. MARK, VENICE

ground floor and two upper stories embellished with rusticated orders, as seen in Fig. 37 (*a*).

71. The Pesaro Palace.—The Pesaro Palace, Fig. 30, designed by Longhena, 1604 to 1675, was built in the decadent period of Venetian Renaissance art. It is a rich and appropriate example



FIG. 30. PESARO PALACE, VENICE

of palatial architecture, although its façade has the usual faults, common to the period to which it belongs, of over-ornamentation and insufficient wall surface ; in addition, much of the sculptured enrichment is of a grotesque character.

72. Santa Maria della Saluta.—Magnificently situated at the east extremity of the Grand Canal, the picturesque, domed church of Santa Maria della Saluta, Fig. 31, is one of the best-known buildings of Venice. It was erected during the years 1631 to 1682, after the designs of Longhena, in gratitude for the cessation



FIG. 31. SANTA MARIA DELLA SALUTA, VENICE

of the great plague with which Venice was afflicted in 1630, and is one of the best of the Venetian buildings constructed during the decadent period to which it belongs.

73. Palazzo del Consiglio.—Erected about the year 1500 after the design of Fra Giocondo, the Palazzo del Consiglio, or town hall, at Verona, is an extremely interesting example of early Renaissance art. The design comprises a ground-floor loggia and a walled upper floor, as shown in Fig. 32. It is notable for



FIG. 32. PALAZZO DEL CONSIGLIO, VERONA

the richness of its *sgraffito* ornamentation, a form of decoration produced by scratching incised patterns on coloured plaster, rather than for any remarkable power as an architectural composition. But although altogether at variance with the principles of the classic art, on which it is founded, the design of the façade is eminently picturesque and pleasing.

74. The Piazza of St. Mark.—Divided into two main parts by the principal waterway of serpentine form known as the Grand Canal, and composed of over 100 islands joined by numerous

foot-bridges beneath which the smaller canals flow between the blackened walls of ancient palaces, the beautiful city of Venice is everywhere picturesque and interesting. But the old-time glories of the once rich and prosperous city, and the external influences that have left their traces on its architecture, can best be recalled and understood by a close inspection of the magnificent buildings that surround the old Piazza of St. Mark, the present and past centre of the civic life of Venice.

75. Formerly paved with bricks, but now laid with stone and marble, the ancient Piazza of St. Mark, the plan of which is shown in Fig. 33, is rectangular in form and measures between 500 and

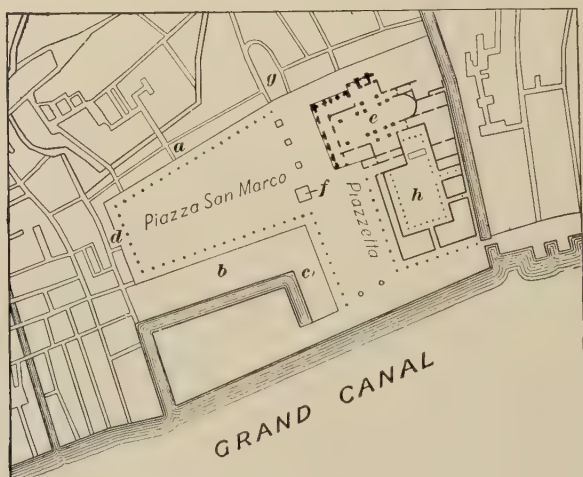


FIG. 33. PLAN OF PIAZZA OF ST. MARK, VENICE

600 feet in length and about 220 feet in breadth. Enclosed on its north, south, and west boundaries by the immense marble façades of palatial buildings, it is bounded on the east by the picturesque front of St. Mark's, the Ducal Palace, and the Piazzetta that extends from the south-east corner of the Piazza to the Lagune. At *a* on the north side of the Piazza stands the Procuratie Vecchie, built in 1496 to 1520 by Pietro Lombardi, Buon and Bergamasco, and on the south, at *b*, the Procuratie Nuove, erected in 1584 by Scamozzi; a portion of its façade is shown in Fig. 35. Of



FIG. 34. CLOCK TOWER AT PIAZZA OF ST. MARK, VENICE

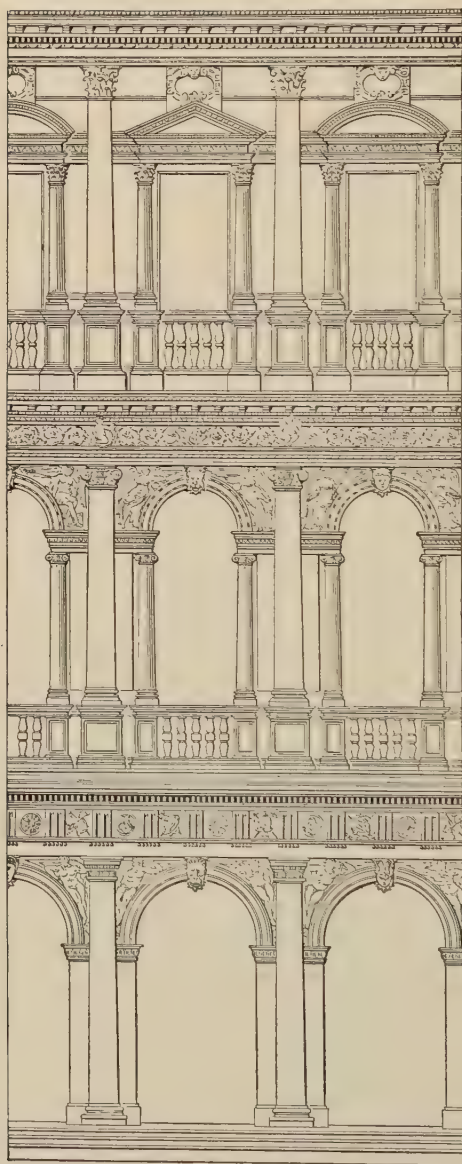


FIG. 35. PORTION OF THE FAÇADE OF PROCURATIE
NUOVE, VENICE

these two palaces, formerly the residences of the nine procurators, the highest officials, after the Doge, of the republic, that on the south, now united with Sansovino's Library, shown at *c* and also in Fig. 29, forms the royal palace.

76. The palace *d* on the west side of the Piazza of St. Mark, Fig. 33, the *Attrio* or *Nuova Fabbrica*, erected in 1810 partly on the site of the church of San Geminiano, unites the north and south palaces and in its architecture repeats Sansovino's arcaded façade of the Library. Originally a Romanesque brick basilica of the early part of the ninth century, rebuilt after its partial destruction by fire in 976, and remodelled in the Byzantine style in the eleventh and following centuries, the fantastic aspect of the façade of the great church of St. Mark, situated at *e*, is

enhanced by incongruous Gothic additions dating from the fifteenth century. Over the principal portal stand the four horses in gilded bronze that once adorned the triumphal arch of a Roman emperor and were sent by Constantine to be set up in his new capital, Constantinople. Thence they were taken to Venice in 1204 after the sack of Constantinople by the Crusaders and Venetians. In 1797 they were transported to Paris by Napoleon to grace the triumphal arch in the Place du Carrousel, but on his downfall in 1815 they were restored to Venice.

77. To the south-west of St. Mark's, Fig. 33, rises the isolated, square Campanile *f* over 320 feet in height, founded in 888, rebuilt

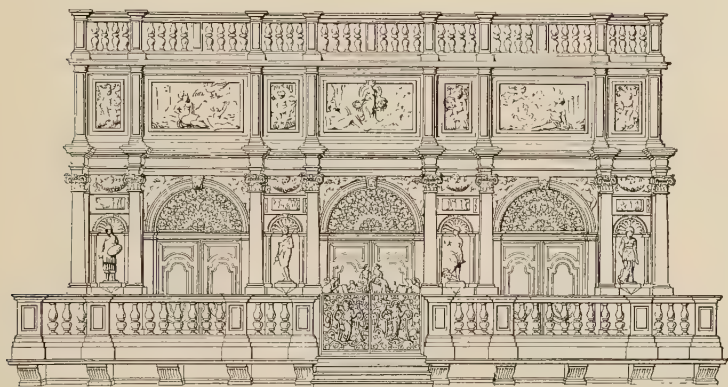


FIG. 36. LOGETTA OF CAMPANILE, VENICE

in 1329, and crowned with the figure of an angel nearly 16 feet high in 1517. The logetta, or vestibule, of the Campanile, Fig. 36, erected by Sansovino in 1540, was used as a waiting-room for the civic guards during the sessions of the Council. A picturesque clock tower, Fig. 34, stands at *g*, Fig. 33, on the opposite side of St. Mark's adjoining the east end of the old Procuratie. This structure, which dates from 1496, rises over a lofty gateway forming the entrance to the Merceria, the principal business street of Venice. The piazzetta is adorned with two fine granite columns, set up in 1180, one of which bears the winged Lion of St. Mark and the other a representation of St. Theodore. Finally, the Venetian Gothic external façade of the Palazzo Ducale, or

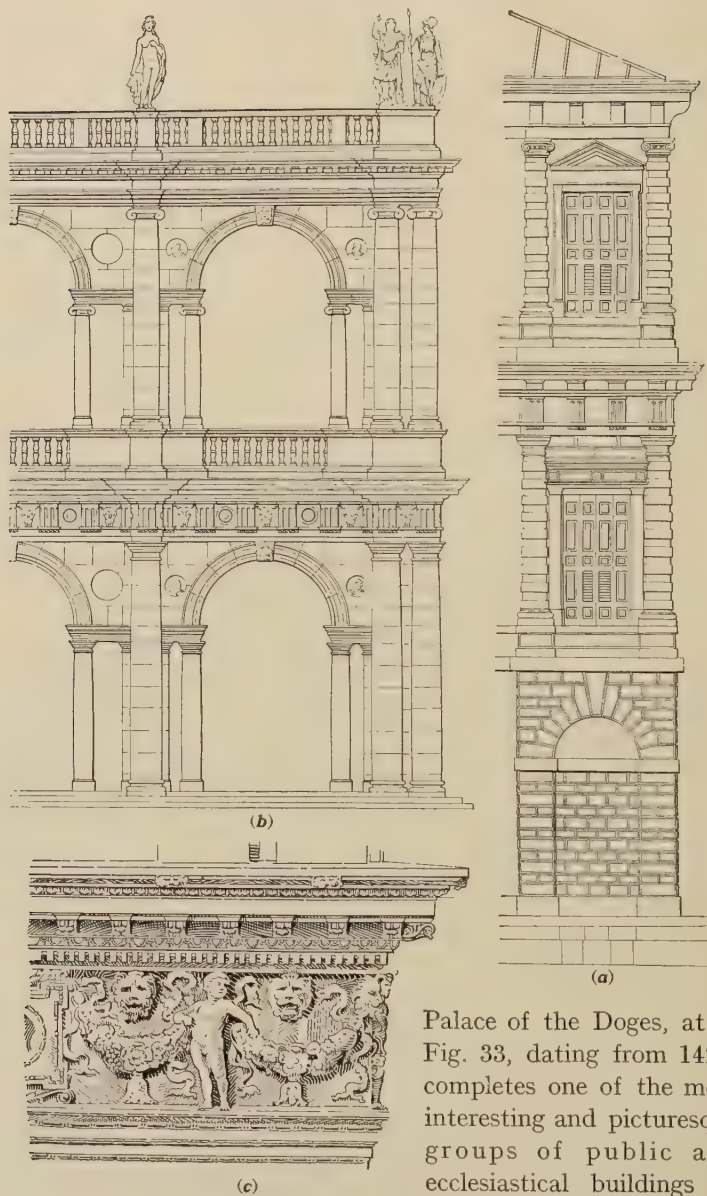
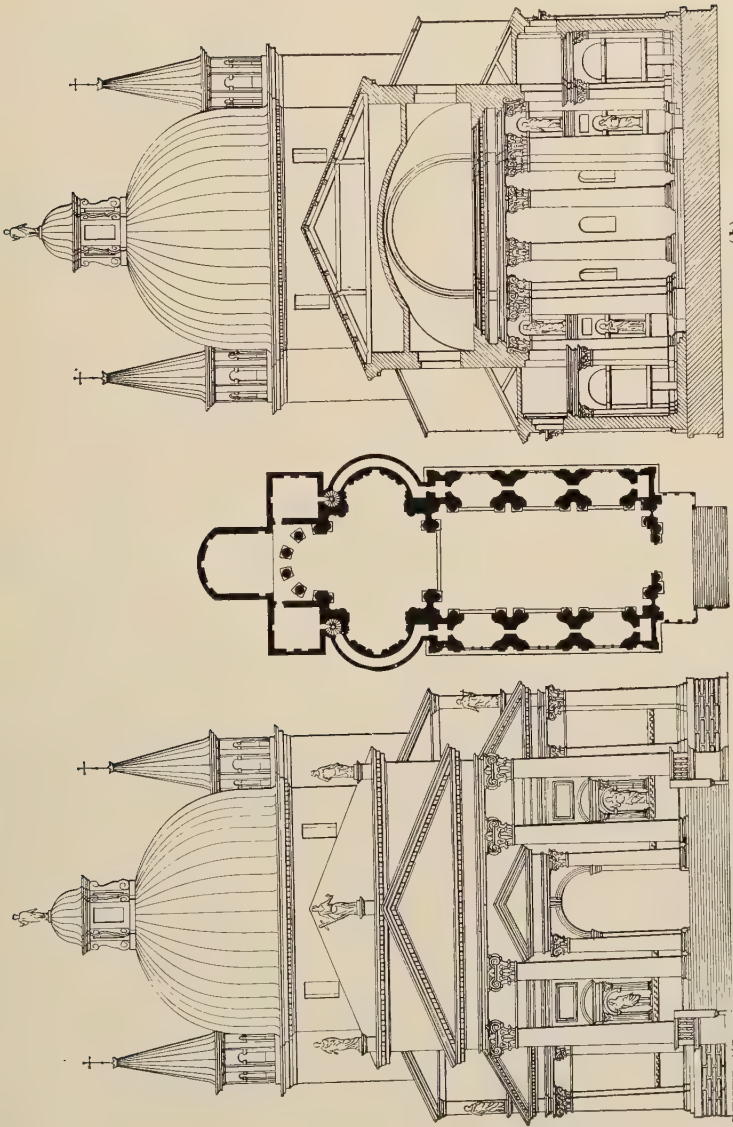


FIG. 37

Palace of the Doges, at *h*,
Fig. 33, dating from 1424,
completes one of the most
interesting and picturesque
groups of public and
ecclesiastical buildings to
be found in the world.



(a) WEST ELEVATION, TRANSVERSE SECTION, AND PLAN OF THE REDENTORE, VENICE
 (b)
 (c)

78. Portions of some of the numerous buildings designed by Andrea Palladio and Sansovino are given in Fig. 37, in which (*a*) shows a bay of the old Mint, La Zecca, by Sansovino, adjoining the famous library designed by the same architect at Venice. In (*b*) is shown a part of the two-storied arcade by Palladio, constructed in front of the ancient basilica at Vicenza, and (*c*) shows a portion of the frieze of Sansovino's Library at Venice, which is illustrated in Fig. 29. Fig. 38 (*a*) shows the west elevation, (*b*) the transverse section, and (*c*) the plan of the well-known Redentore Church, Venice, built after Palladio's design, in 1576.

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

79. **Plans.**—The palatial buildings of Italy, which were generally rectangular in form, usually included a large inner arcaded quadrangle, or *cortile*. This cortile was approached from an imposing vestibule, or entrance hall, the doorway of which was centrally placed in the principal façade. The irregular grouping of the component parts characteristic of mediaeval plans was superseded by a carefully balanced and symmetrically arranged design with the result that the picturesque outline of the Gothic castle was replaced by the simple form and monumental dignity of the Renaissance palace. Internally, the arrangement of the spacious halls and vast suites of reception rooms, built round the central cortile and profusely adorned with antique sculptures and other works of art, was significant of a great change in the manners and customs of the people. The plans of the churches, especially in the early period, were usually of a mediaeval type, although they possessed fewer component parts, and the openings between the main arcades were much more spacious than those of the Gothic churches. A large central dome was a favourite feature of the simple cruciform, or basilican, church of the early Renaissance period.

80. Walls.—The mediaeval custom of facing the external walling with small, roughly dressed blocks of stone of irregular size was abandoned and the use of large blocks of stone, worked to a smooth surface, close jointed, and set in regular courses, became general. *Rusticated work*, a name given to ashlar masonry the joints of which are worked with grooves or mouldings to render them conspicuous, was commonly used for the lower floor of palatial buildings, to give the structure an appearance of strength and solidity, and in the quoins or external angles of the walls. The flat, unbroken façades of the early Florentine palaces depended for their effect on good proportion, well-designed crowning cornices, and on the skilful disposition and adornment of the openings. Later, classic orders and pilasters, loggias, and porticoes gave variety and interest to the finely proportioned and stately façades of Italian palaces.

81. Roofs.—Roofs of low pitch and of timber construction, usually concealed behind the balustrade that surmounted the huge main cornice, were in general use during the Renaissance period and vaulted and barrel ceilings were frequently employed.

82. Columns.—As a rule, when used externally the orders were carefully proportioned and enriched with mouldings, designed in accordance with the traditions of classic art. But when applied to internal decoration, or in subordinate architectural works, such as altars, pulpits, and sepulchral monuments, the desire to give the column a decorative effect commensurate with that of the other parts of the interior led to the introduction of *cinctures*, or bands, that divided the shaft into two parts. Garlands, weapons, trophies, or cartouches were suspended from the lower part, while the upper part of the column was either fluted or adorned with the foliated or other ornamentation characteristic of the period. During the decadent phase columns were built up with ornamental drums alternating with plain shafts. Occasionally the shaft was given a spiral twist and flutings were applied to the spiral form. When columns and arches were used in combination to form arcades the arches rested either directly on the capitals, as shown in Fig. 12, on small portions of entablatures, Fig. 4, or they were supported in the manner adopted

in the arcading of the Colosseum at Rome, namely, by small subordinate piers finished with import mouldings and bases, as in Fig. 15.

83. Openings.—The heads of door and window openings of early Renaissance buildings in Florence and Rome were usually either square or semicircular in form, and the pointed arch was seldom used. But in Venice the juxtaposition of semicircular and pointed arches in the same façade was by no means uncommon in the early days of Renaissance art. In the middle period of the classic revival in Italy the orders were freely used for the embellishment of openings, and pediments were common features of the doors and windows formed in the façades of palatial buildings.

84. The windows of Italian palaces usually conformed with one of the types of design illustrated in Fig. 39. Early in the Renaissance period, before the influence of mediaeval art had altogether died out, semicircular-headed windows, arranged in two lights, the sub-arches of which were supported by a small dividing column, as in Fig. 39 (*a*), were freely used.

85. With the fuller development of the Renaissance movement came a closer reproduction of antique forms and details, resulting in a return to the square type of window head consisting of an architrave, continued through the sides of the opening, and a crowning cornice, which was either brought down to the level of the architrave, as in Fig. 42 (*b*), or, as in purer reproductions of classic art, placed immediately above the top member of an intervening frieze, Fig. 39 (*b*) and (*c*). An example of a pedimented window is illustrated at (*d*), and another, designed by Michelangelo for St. Peter's at Rome at (*e*). The so-called *Venetian window*, comprising three lights and said to have been invented by Scamozzi, is illustrated at (*f*).

86. Examples of the Renaissance treatment of window openings in rusticated walls are shown at (*a*) and (*b*) of Fig. 40. Of these illustrations the former is copied from Palladio's Porto Barbarano Palace at Vicenza and the latter, also by Palladio, from the Porto Palace, Vicenza. Fig. 40 (*c*) shows a window

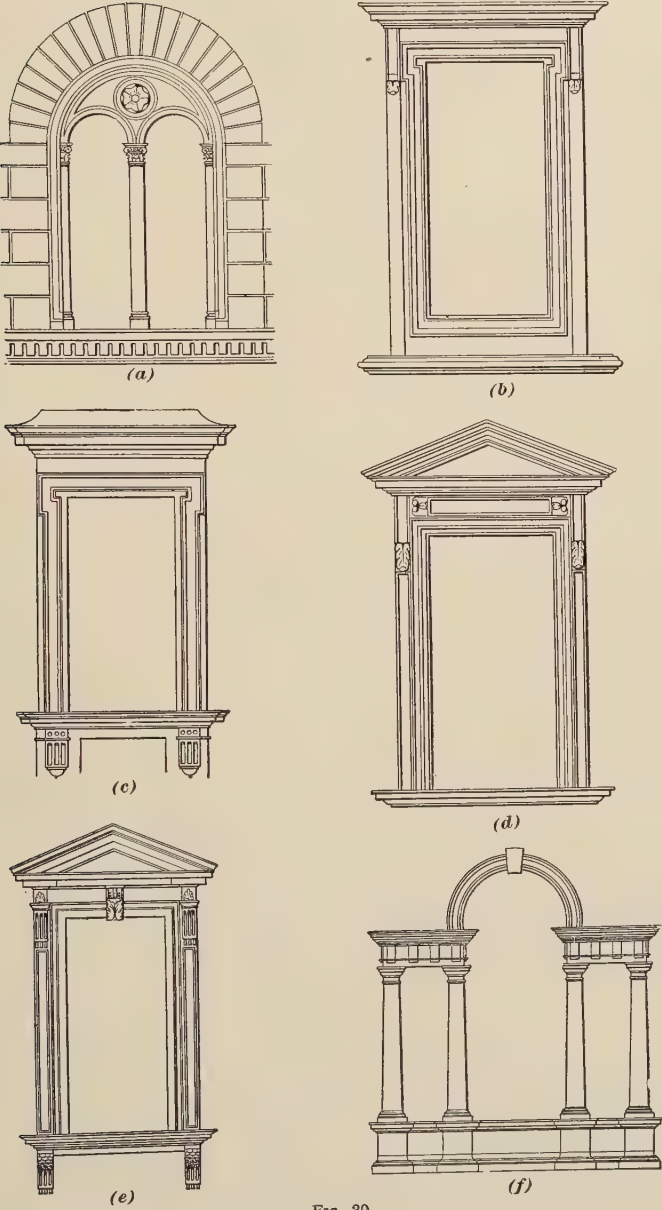


FIG. 39

of the Farnese Palace at Rome, in which the architrave and frieze at the head of the opening are omitted to give increased

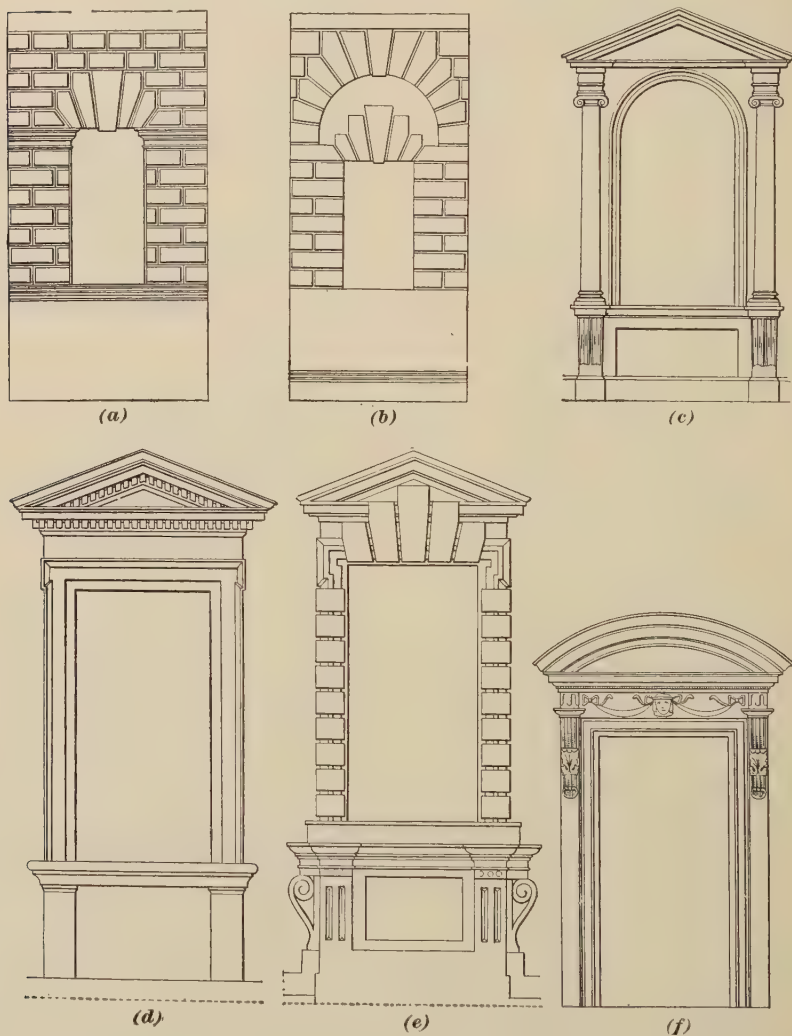


FIG. 40

height to the semicircular-headed window. Other examples of Italian Renaissance windows are given at (d), (e), and (f).

87. The doorways of the earlier Italian palaces usually consisted of very little more than a wide opening with semicircular-shaped heads, round which the characteristics of the rusticated masonry in which they were formed were continued in the *voussoirs*, or radiating blocks of stone forming the archway, as seen in the front of the Strozzi Palace, Fig. 7. But, at a later period of the Renaissance, doorways of a much more elaborate nature were introduced, of which the usual ornaments consisted of columns or pilasters, entablatures with or without pediments, rustics, imposts, archivolts, and consoles.

88. Fig. 41 (*a*) illustrates a simple but extremely pleasing example of a doorway designed by Vignola, in which the aperture formed round a double square occupies two-thirds of the whole height and one-half of the breadth. At (*b*) is shown another doorway, also by Vignola, from the Cancellaria at Rome. In this example the breadth of the architrave is one-fifth of the width of the aperture and the pilasters that support the consoles are half as broad as the architrave. A third example of Vignola's doorways is shown at (*c*), in which the arched aperture is adorned with rusticated Doric pilasters and an entablature. The example shown at (*d*) is copied from a doorway at Florence, said to have been designed by the architect Luigi Cardi, 1559 to 1613, and that at (*e*) is from the fourth volume of the well-known architect Serlio's work on architecture. At (*f*) is shown a doorway designed by Vignola for the Cancellaria at Rome, but never carried out.

89. **Mouldings.**—Renaissance mouldings were almost invariably based on classic models, although in the early and late periods of Italian art the proportions of ancient examples were not very carefully followed, as shown, for example, in the exaggerated depth given to the friezes of the main entablatures in some of the later Renaissance buildings at Venice.

90. **Ornamentation.**—Although founded on antique forms, the rich and varied ornamentation of the Renaissance period was not a servile imitation, but rather a free adaptation of the enrichments used in classic art. And this freedom from the restraint of tradition was also expressed in the first and fourth period of

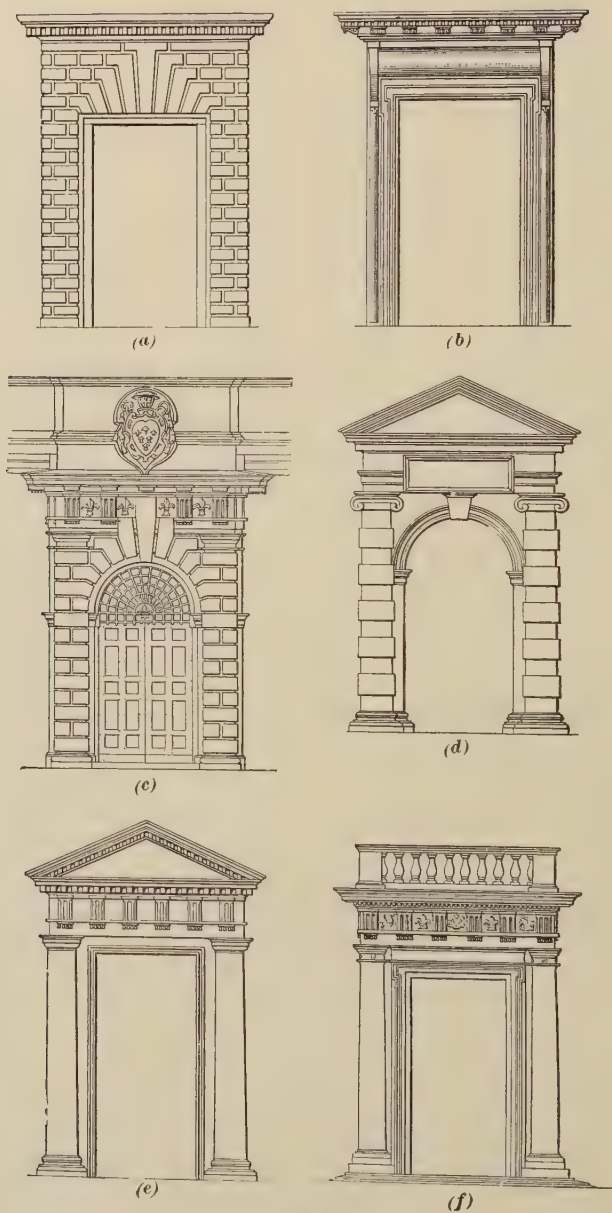
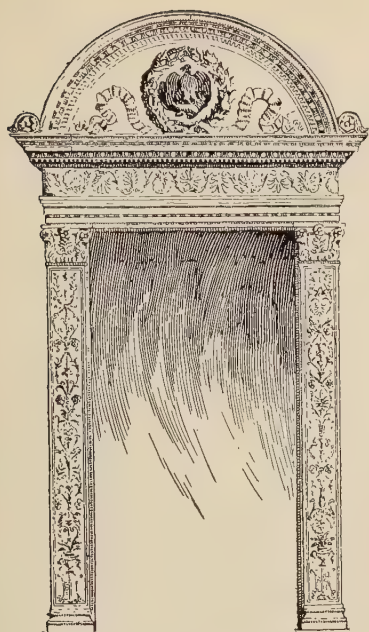
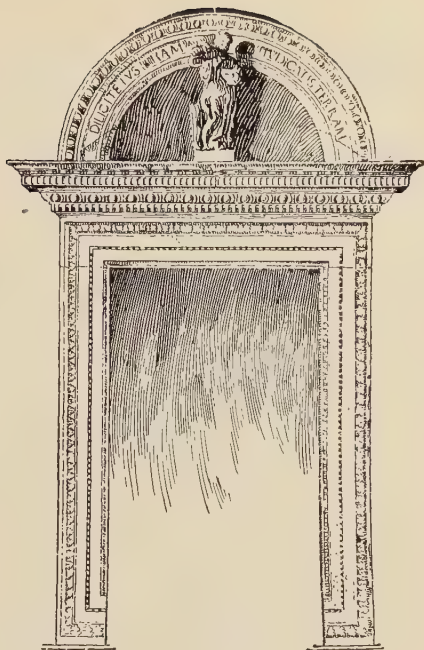


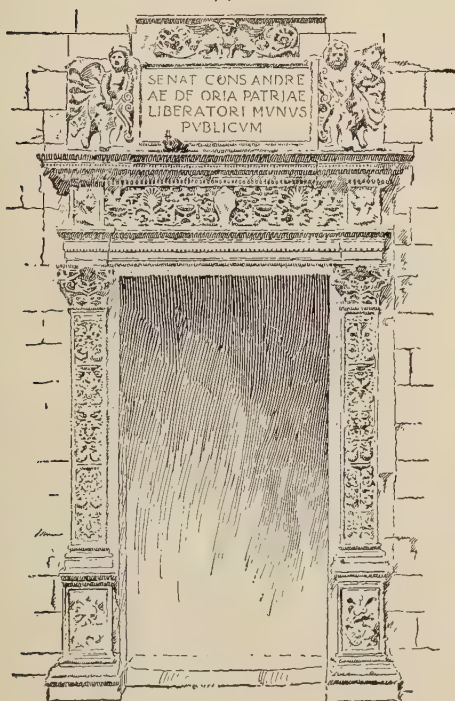
FIG. 41



(a)



(b)



(c)



(d)

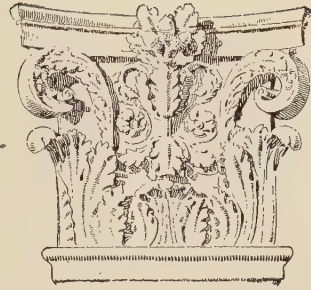
Renaissance architecture by the unconventional form and arrangement of the mouldings, pediments, and other decorative features of the doors and windows.

91. Some of these peculiarities appear in the four early Renaissance doorways illustrated in Fig. 42. Of these examples, that at (*a*) consists of two narrow, panelled pilasters with moulded bases and carved capitals supporting an entablature above which the cornice moulding of the segmental pediment is terminated by small scrolls, while the central portion is relieved by a copy of a well-known relief, that of an eagle encircled by a wreath of oak leaves, from Trajan's Column at Rome. The panelled pilasters of this white marble doorway are lavishly enriched with delicately carved arabesques of the type shown at (*c*) and (*d*), Fig. 44, while the frieze is ornamented with the Greek honeysuckle and anthemion. In the doorway shown at (*b*) there is no frieze, but the clumsily designed cornice is placed immediately above a wide architrave continued down to relieve the jambs of the doorway. A very characteristic and refined example of an early doorway from a Genoese palace is illustrated at (*c*), but the example shown at (*d*), also from Genoa, is meaningless and absurd, as the carved caps are placed only a little distance above half the vertical height of the pilasters to which they are appended.

92. The vigour with which marble sculpture was revived in Italy during the period of the Renaissance is clearly shown by the charm and variety that characterized the carved capitals of the Early period, examples of which are seen in the eight pilaster caps illustrated in Fig. 43. While all show in the curved form of the abacus some affinity with those of the Roman Corinthian Order, the resemblance is more apparent in the examples (*a*), (*b*), (*f*), (*g*), and (*h*) than in (*c*), (*d*), and (*e*), in which the classic volutes are replaced by cornucopiæ, as at (*c*), or by human forms, as at (*e*). The acanthus leaf is either conspicuous by its absence, as in (*e*), or scantily used, as in (*c*), but grotesques and winged or other figures are freely introduced in (*c*), (*d*), and (*e*). In the Second, and best, period of Italian Renaissance art, the antique orders and their enrichments were closely followed.



(a)



(b)



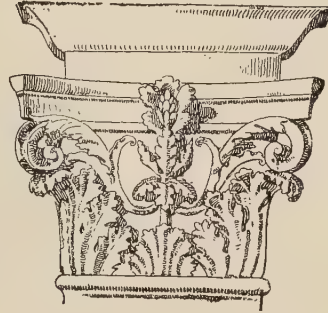
(c)



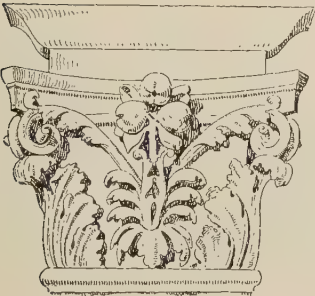
(d)



(e)



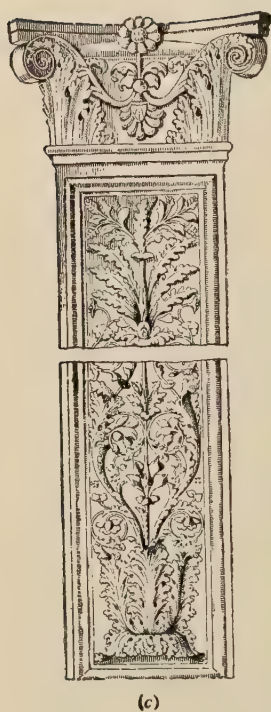
(f)



(g)



(h)



(c)



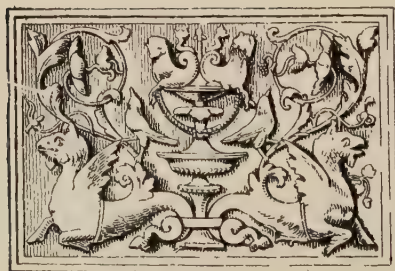
(a)



(d)



(b)



(e)



(f)

FIG. 44

93. The carved decoration of the panelled surfaces of the pilasters consisted of an ascending plant rising in the form of a wavy line from a base of acanthus leaves, vases, etc., as shown in Fig. 44 (c) and (d), or from the base of a pattern similar to a candelabrum, as in (b). Other panel enrichments included the repeating foliated scrolls illustrated at (a). Sometimes the panel ornamentation took the shape of wreaths formed of leaves, fruit, or flowers into which central flat circular ornaments, known as *palææ*, and heraldic devices were introduced as in Fig. 45 (a), (b), and (c).

94. Other forms of ornamentation, such as those shown in Fig. 44 (e) and (f) and in Fig. 45 at (f) and (g), include delicate representations of curved branches of foliage arranged in a symmetrical or regular manner, in which the acanthus leaf plays an important part, although representations of the foliage of the vine, laurel, ivy, etc., are frequently found. Foliage ornamentation was frequently relieved by vases, grotesques, dolphins, and animals, as in Fig. 44 (e) and (f), in addition to symbolical subjects, arms, and emblems. Elaborate metal grilles, as in the examples Fig. 45 (d) and (e), were often placed in the upper part of the doorways. The enriched and unusually deep frieze of Sansovino's Library at Venice is shown in Fig. 37 (c). The classic rendering of the main cornice is noteworthy.

95. The ceilings of churches and palaces, whether rounded or flat in form, were often ornamented with frescoes painted by the most distinguished artists of the day. These pictures were usually framed by decorated borders relieved by floral and animal motives. Ornamental flooring of the Renaissance period comprises the linear mosaic ornament of the Early Christian and Middle Ages combined with inlaid marble patterns of great beauty. The colour scheme of these floor decorations is usually extremely simple, although occasionally, as, for instance, in the cathedral of Siena, the elaborate pictorial nature of the design goes beyond the legitimate bounds of ornamentation. In addition to excellent carving, the woodwork of the Renaissance period was often enriched with *intarsia*, or wood inlay, the designs of which comprised the usual motives of Italian Renaissance decorative art.

96. In *sgraffito* work, a favourite form of enrichment among the Italian artists of the Renaissance, the surfaces of the walls or

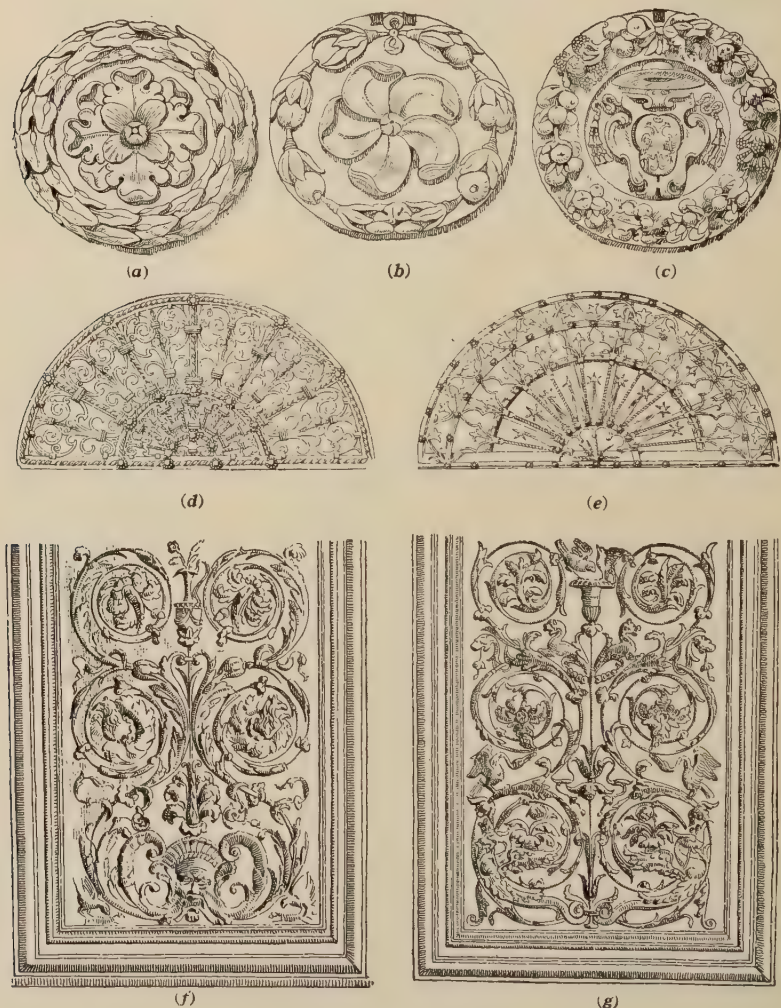


FIG. 45

ceilings to which this form of decoration is applied are covered with an under coating of dark stucco and an upper one of white-wash. The designs, which are in the nature of those used in plastic

(c)

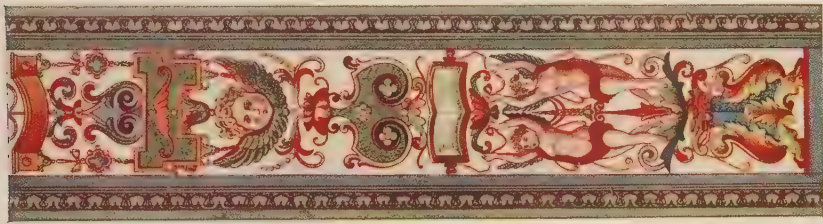


(d)

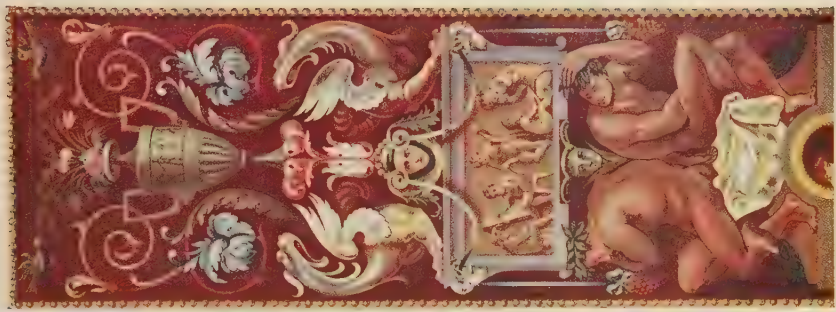


Fig. 46

(e)



(b)



ornamentation, are produced by scraping away the upper coating of whitewash in accordance with the outline required, which is thus defined by the dark stucco ground.

97. The works of Raphael and his school, as seen in the ornamentations of the loggias of the Vatican, exemplify the coloured decoration of the best period of the Italian Renaissance. Of the examples illustrated in Fig. 46 those shown at (*a*) and (*b*), from the loggias of the Vatican, are said to be based on some antique reliefs discovered in the Baths of Titus at Rome, that at (*a*) is a pilaster decoration, and (*b*) a panel from a window niche, while (*c*) and (*d*) are panel enrichments from one of the chapels in St. Maria in Aracoeli at Rome.

FRENCH RENAISSANCE

NOTES ON FRANCE

HISTORICAL AND SOCIOLOGICAL

98. Wars With Italy.—Francis I, 1515 to 1547, the founder of the second line of Valois kings, commenced the long series of French invasions of Italy that led to frequent quarrels with the emperor Charles V, the most powerful monarch of his time, and thus brought great disasters on the French people. During this reign the Reformation took deep root in France, and, although, in order to weaken the power of the emperor, Francis aided the German reformers, yet he made a determined effort to extirpate the reformed religion from his own country. With this object the Vaudois, the peaceful Calvinistic people of Piedmont, were ruthlessly persecuted and hunted to death.

99. Civic Wars.—The Italian wars and the persecutions of the Protestants were continued by Henry II, 1547 to 1559. But in spite of all attempts to suppress them, the French Protestants, or Huguenots, continued to increase in power and influence, with the result that, during the reigns of Henry II's three sons,

Francis II, 1559 to 1560, Charles IX, 1560 to 1574, and Henry III, 1574 to 1589, France was convulsed by civic wars and massacres.

100. Edict of Nantes.—The glory of bringing peace to France belongs to the Huguenot King Henry IV, 1589 to 1610, who in 1598 promulgated the Edict of Nantes, under which religious toleration was granted to his Protestant subjects. On his death his widow, Marie de Medici, assumed the regency on behalf of the young King Louis XIII, 1610 to 1643, and abandoned the wise and tolerant policy of the great King. Thereupon the Huguenots, with the idea of forming a Calvinist state within the Catholic country of France, garrisoned their fortresses with mercenary troops. Richelieu, the able Minister of Louis XIII, destroyed these hopes by re-establishing political unity without restraint of religious liberty.

101. Reign of Louis XIV.—Louis XIV, 1643 to 1715, revived imperial ideas and insisted that he personified the country; and little by little, the state became identified with the king for whom the nobles fought and by whom crushing taxes were levied on the people to meet royal pleasures and extravagances. Four great wars, waged by Louis XIV, were largely due to his personal ambition and vanity. The revocation of the Edict of Nantes and the bitter persecution of the Huguenots marred the glory of his brilliant reign, during which France was impoverished, her revenues mortgaged, and her industries destroyed.

102. Financial Chaos.—In the reign of Louis XV, 1715 to 1774, the financial affairs of France became worse. The public debt was enormous and the Government had no credit. On the advice of John Law, a financial adventurer, a vast amount of paper money was issued by the Government on the security of mines in Louisiana, but the Mississippi Bubble, as it was called, burst, bringing absolute ruin on thousands of the French people.

103. French Revolution.—Louis XVI, 1774 to 1793, succeeded to the throne of a bankrupt country filled with starving people overwhelmed by taxation. Democratic ideas were rife and the despotism of the king became intolerable to the people. Louis XVI might perhaps have delayed, but could not have averted,

the impending catastrophe known as the French Revolution, in which he lost both crown and life.

104. Napoleon Bonaparte.—The Republic, or Reign of Terror, was succeeded by the period known as The Directory, 1795 to 1799, during which the executive power was given to five men. These were deposed by Napoleon Bonaparte, who established the Consulate of three members, of whom he was the first and later made himself Emperor of France, under the title of Napoleon I. The downfall of Napoleon led to the restoration of the exiled Bourbon family, which ended with the Revolution of 1848 and the formation of a second Republic. In 1852 the Empire was restored under Napoleon III.

105. Society and the Arts.—On the accession of Francis I the feudal system had been overthrown by the monarchy, the social condition of the people improved, and Parliamentary representation instituted. Civilization made but slow progress during the reigns of the later Valois kings, but, aided by his able minister Sully, Henry IV, the founder of the Bourbon line, established financial reforms, fostered agriculture and trade, and encouraged the fine arts. In the succeeding reign, under the guidance of the great Cardinal-statesman Richelieu, France became the first state in Europe, while the long reign of Louis XIV, during which the Academy of Arts and those of Belles-Lettres and Science were founded, is regarded as the golden age of French literature and art.

ARCHITECTURAL PERIODS

DISTINCTIVE FEATURES

106. Classification of Periods.—The periods of the Renaissance in France are known as (*a*) the Early period, extending from the time at which the revival reached France, toward the end of the fifteenth, until late in the sixteenth century; (*b*) the Middle, or Classic, period, lasting from the commencement of the reign of Henry IV, 1589, to the death of Louis XIV in 1715; and (*c*) the Decadent or Rococo, period, 1715 to 1774, corresponding in

duration of time with the regency of the Duke of Orleans and the actual reign of Louis XV.

107. Influence of Italian Artists.—In the first half of the fifteenth century the Gothic architecture of France began to show signs of decay, while, as early as 1450, many of the great painters of the country were working under the influence of Italian Renaissance art. This influence was increased and fostered by the great immigration of Italian artists into France, which, commencing during the reign of Charles VIII, 1483 to 1498, reached its height under Francis I, 1515 to 1547, when many distinguished Italian painters, including Leonardo da Vinci, Andrea del Sarto, Rosso, and Primaticcio, appeared in France.

108. The protracted nature of the wars in Italy waged by the French during the past fifty years had engendered a feeling of admiration for the more civilized manners and customs of the invaded country and for the architecture of its stately cities. On their return from Italian expeditions Charles VIII and Louis XII had already brought back some Italian artists, whose influence is shown in a few examples of very early Renaissance work in France. But it was left to Francis I to organize the immigration of Italian artists and scholars on a sufficiently large and important scale to enable him to establish humanism firmly in his own country.

109. The Early Period.—Under the influence of these Italian artists the massive towers of the old feudal castles were transformed into light and richly ornamented turrets, and gloomy-looking fortresses changed into comfortable dwellings. Magnificent chateaux, in which the new Italian art was curiously blended with Gothic features, arose on the banks of the Loire and Cher. The graceful and interesting architecture of the Francis I period is well exemplified in the stately castellated mansions of Azay-le-Rideau, Chenonceaux, and Chambord. Traces of the late Gothic architecture of the country abound in the early Renaissance of France, but from the time of Henry II measured severity of form and regularity of detail began to take the place of picturesque outline and varied and eclectic decoration.

110. By closely studying the monuments of ancient Rome for themselves, French architects of a later period of the Renaissance were enabled eventually to become prominent in their native country. Among the most illustrious names are those of Pierre Lescot, 1510 to 1578, who commenced the rebuilding of the Louvre, Philibert Delorme, 1515 to 1570, who planned the palace of the Tuileries for Catherine de Medici, Jean Bullant, who built the Château d'Ecouen, and Chantilly and the Ducercean family. Among the great sculptors of the French Renaissance were artists such as Pierre Bontemps, Germain Pilon, and Jean Goujon, 1520 to 1572, whose caryatides at the Louvre and bas-reliefs on the Fountain of the Innocents at Paris are among the most beautiful works of modern times.

111. The Classic Period.—The ecclesiastical architecture of the time of Henry IV and Louis XIII is shown in the façade of the church of St. Gervais, Paris, which has colonnades of different orders placed one over the other. Its architect, De Brosse, also designed the Palais du Luxembourg. Among other architects of this period were Jacques Lemercier, the architect of Richelieu's sumptuous Palais Cardinal, and Francois Mansart, who designed the dome of the Val-de-Grâce.

The architecture of Louis XIV's reign is represented by Perrault's huge colonnade at the Louvre, the dome of the Invalides, designed by Jules Hardouin Mansart, 1646 to 1708, and the immense palace at Versailles.

112. The Rococo Period and the Classic Revival.—A reaction against the cold formal and grandiose art of Louis XIV set in during the reign of his successor, when the Rococo style, with its curved lines and forms, gilded carvings, and profuse enrichments, became prevalent. But, as shown by the buildings of the period, notably in the façade of the church of St. Sulpice, by Servandoni, 1733, the portal of St. Eustache, 1755, and the Pantheon, begun by Soufflot in 1764, the transition to classicism was soon brought about and the art of ancient Rome was again prominent during the periods of the Revolution, the first Empire, the restoration of the Bourbon kings, and the second Empire of Napoleon III, 1852.

ARCHITECTURAL EXAMPLES

113. Château de Blois.—The older portions of the Château de Blois, including the great hall of the thirteenth century, situated at *a* in the plan, Fig. 47, and the north-east or entrance façade *b*, built by Louis XII, have already been described under French Gothic architecture. The later additions, comprising the north-west wing *c* of the castle built in the reign of Francis I, and



FIG. 47. PLAN OF CHÂTEAU DE BLOIS

the south-west block *d*, commenced by Gaston d'Orleans in 1635 to replace the original wing erected by Charles d'Orleans, father of Louis XII, are not less interesting than the earlier buildings, already described. Under Francis I the transformation of the old feudal castle was continued between the years 1515 and 1524, and in the work carried out at Blois within this period the early Renaissance style is seen in all its brilliancy.

114. The exterior façade *c*, Fig. 47, of the imposing building of Francis I, is shown in Fig. 48. It is reared on massive supporting walls relieved by two Italian loggias and surmounted by a continuous attic balcony formed immediately below the roof. On the right is an ancient tower, shown at *e*, Fig. 47, embellished with galleries of the sixteenth century and beyond is the end wall of the later building of Gaston d'Orleans. The façade illustrated in Fig. 49 represents the courtyard side of the wing, the outer front of which is shown in Fig. 48.

115. The grand staircase projecting well beyond the general walling in an open octagonal tower, Fig. 49, is embellished with

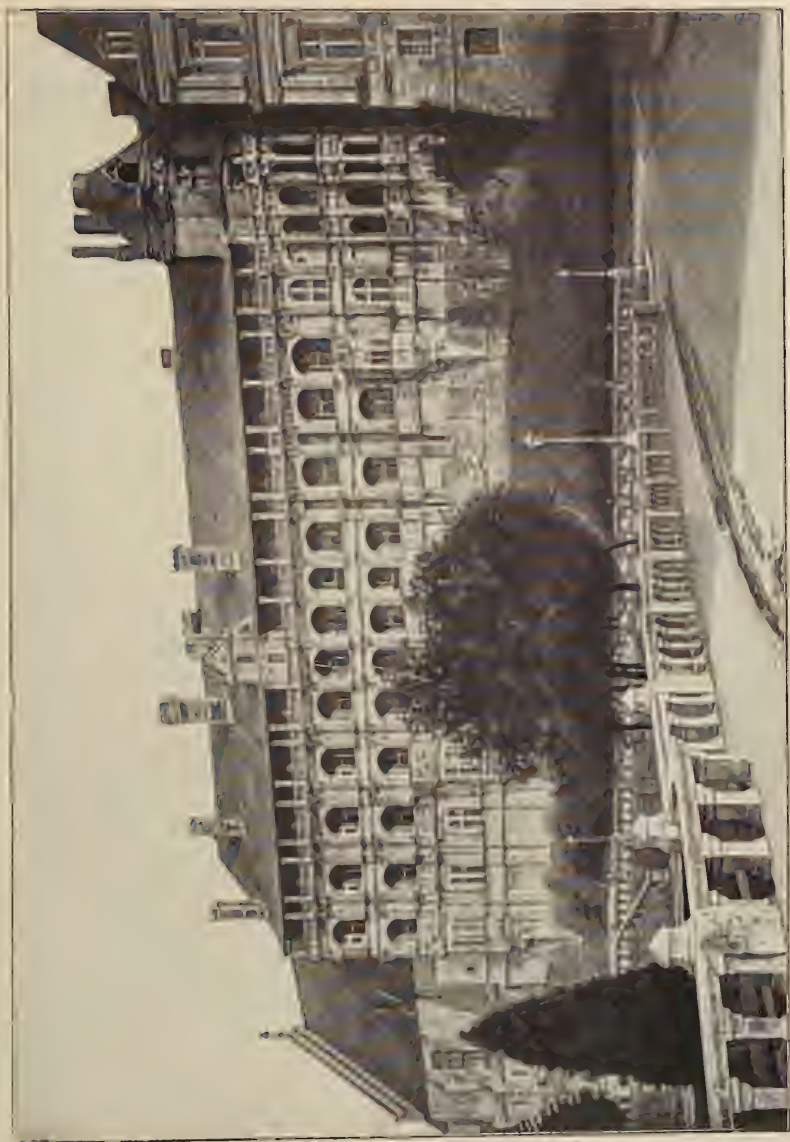


FIG. 48. EXTERIOR FAÇADE OF CHÂTEAU DE BLOIS

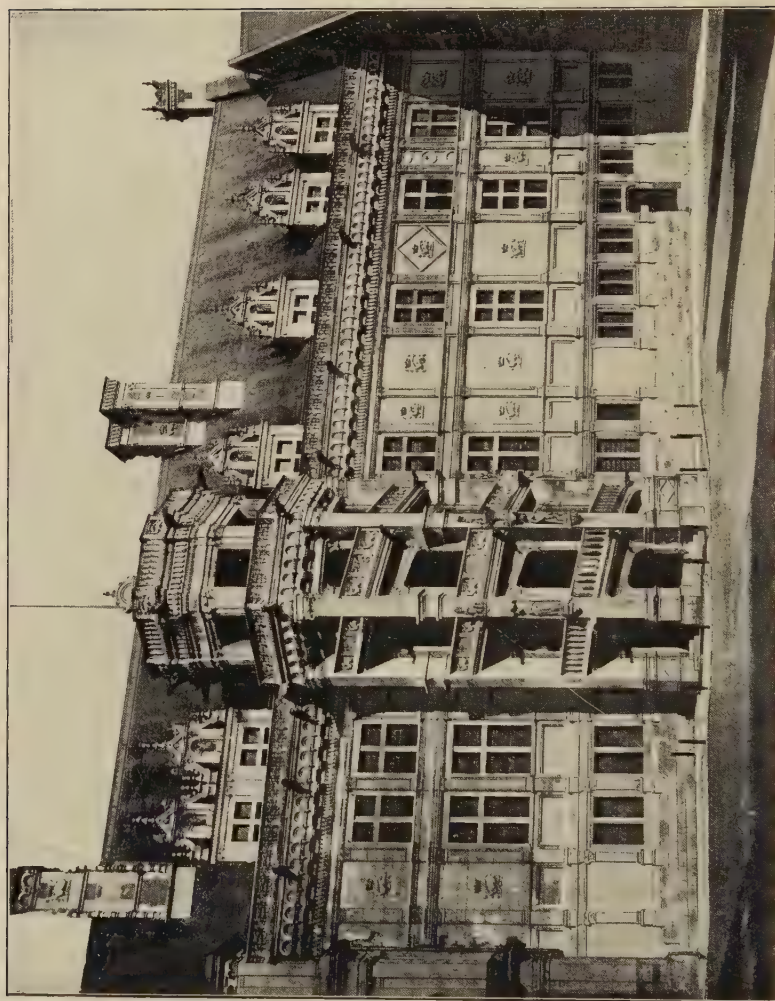


FIG. 49. INTERIOR FAÇADE OF CHÂTEAU DE BLOIS

balustrades and wonderfully elaborate and delicately carved enrichments. Apart from this staircase the internal elevation of the Francis I wing comprises a well-designed structure with



FIG. 50. ENTRANCE TO SOUTH-WEST WING, CHÂTEAU DE BLOIS

large panelled wall surfaces, three stories in height, crowned by a richly ornamented cornice and balustrade, above which is a high-pitched roof relieved by dormers of elaborate design and decorated

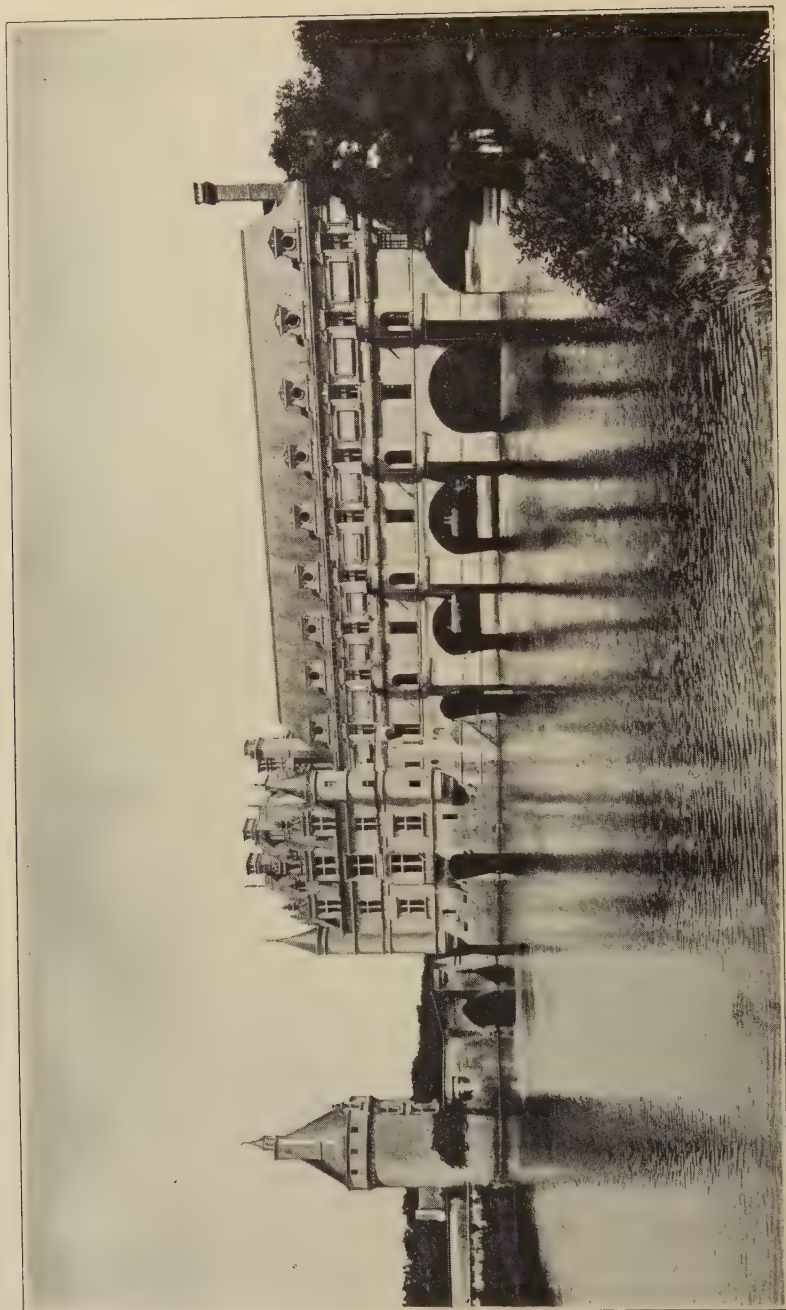


FIG. 51. CHÂTEAU DE CHENONCEAUX

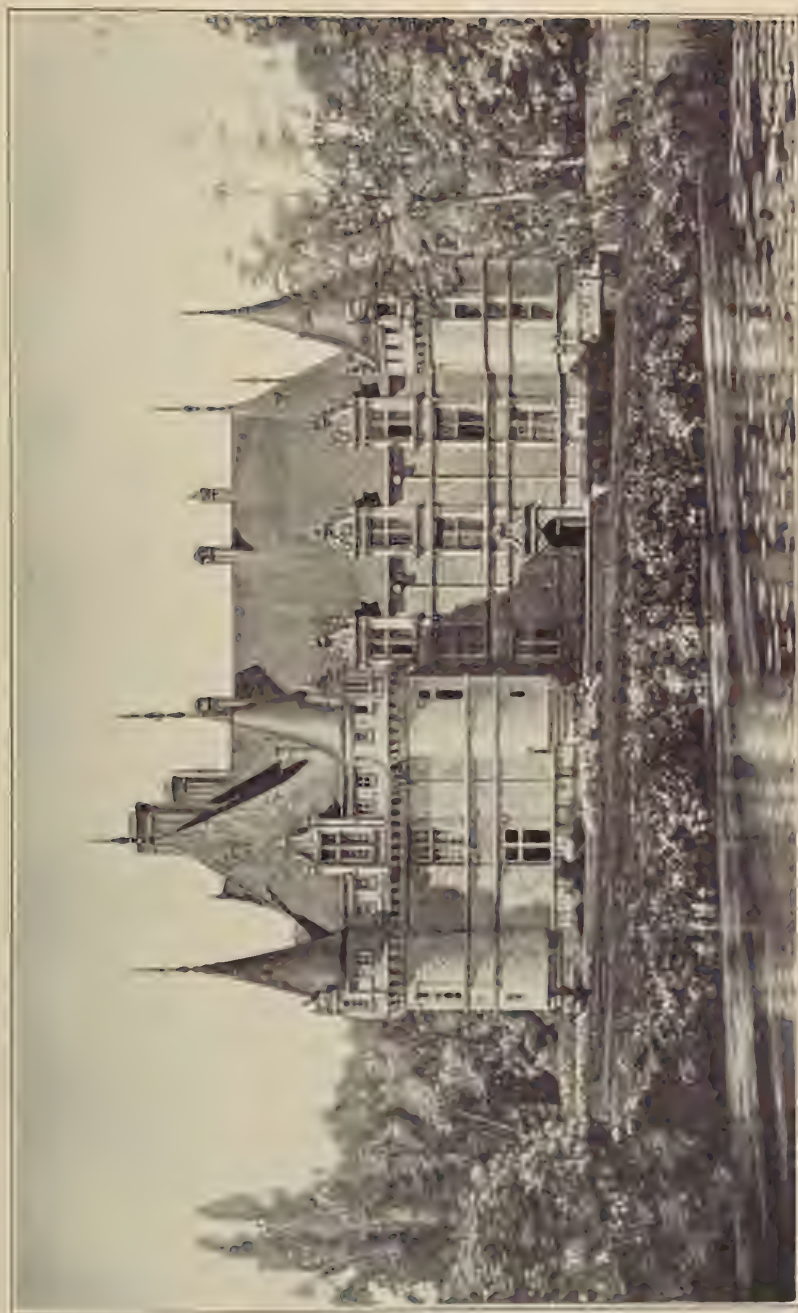


FIG. 52. CHÂTEAU D'AZAY-LE-RIDEAU

with statues of children. The initials of Francis I and Claude of France and the King's emblem, the crowned salamander, are worked into the ornamentation in all parts of the building.

116. The central portion of the south-west wing, *d*, Fig. 47, of the Château de Blois is shown in Fig. 50. Designed by Francois Mansart for Gaston d'Orleans, the brother of Louis XIII, in the middle Renaissance or Classic style, the architecture of this portion of the castle is in striking contrast with the early Renaissance work of Francis I. The classic orders, Doric, Ionic, and Corinthian, are used in the three horizontal stages into which this very

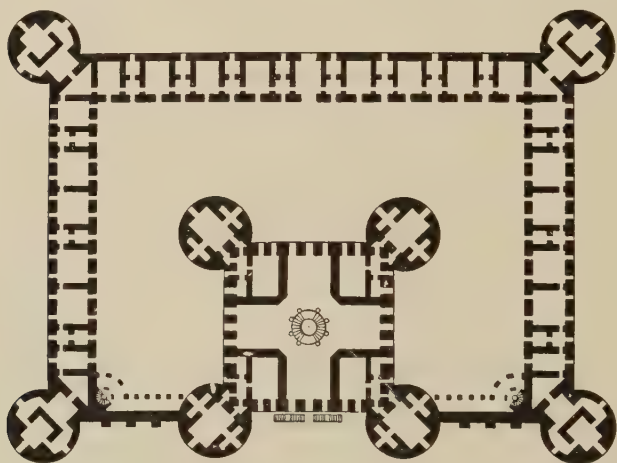


FIG. 53. PLAN OF CHÂTEAU DE CHAMBORD

able design is divided. The chief attraction of the interior is a beautifully designed staircase terminating in an imposing double-storied cupola.

117. Château de Chenonceaux.—Situated amid extremely picturesque surroundings and built across the bed of the river Cher, the small Château of Chenonceaux, Fig. 51, is approached by a drawbridge placed across a wide moat of running water. The château, commenced about the year 1515, occupies the site of a former castle of which the donjon, or keep, a fine round tower of the fifteenth century with Renaissance additions, alone remains.



FIG. 54. CHÂTEAU DE CHAMBORD

118. Built on the foundations of an old mill sunk well into the bed of the river, the château consists of a large square pavilion flanked by four projecting turrets and covered with a high-pitched roof. The façades of the building are enriched with the characteristic early French Renaissance detail of the period to which the building belongs. But the chief architectural feature of the château consists of the great gallery, a two-storied structure designed by Philibert Delorme, that adjoins the south façade of the chapel and, carried on five stone arches with massive abutments, extends across the river, as seen in Fig. 51.

119. Château d'Azay-le-Rideau.—Of comparatively simple and modest construction, the small Château d'Azay-le-Rideau, Fig. 52, may be regarded as an example of early French Renaissance art at its best. Beautifully situated in the midst of well-wooded and well-watered surroundings, much of the charm of this picturesque building may be due to natural causes. But, nevertheless, the genuine architectural effect produced by the refinement of its detail and the general harmony and continuity of its design must not be overlooked.

120. Château de Chambord.—Formerly an ancient hunting seat of the Comtes de Blois, the Château of Chambord, the plan of which is shown in Fig. 53, was commenced by Francis I in 1519, but only partially finished by that monarch. The work was continued by his son and successor Henri II, who, however, did not bring it to a state of completion. In the disposition of its plan the château closely resembles a fortified castle of the Middle Ages. Built in the form of a huge rectangle, 520 feet long by 390 feet wide, the corners of the buildings are flanked by four enormous towers 60 feet in diameter. A second structure, also square in plan and surrounded by four towers of similar form but loftier proportions, constitutes the central feature of the main façade, Fig. 54.

121. The central building contains a grand staircase, similar in its architectural details to the staircase of the same period, that of Francis I, at the Château of Blois, but also famous for the unusual arrangement of its double-spiral stairs. By means of this ingeniously contrived staircase two persons can pass up or down

at the same time, without meeting each other. This staircase forms the central feature of four halls that project from it in the form of a Greek cross, as seen in Fig. 53. One of these halls with its deeply panelled stone ceiling is shown in Fig. 55. Architec-

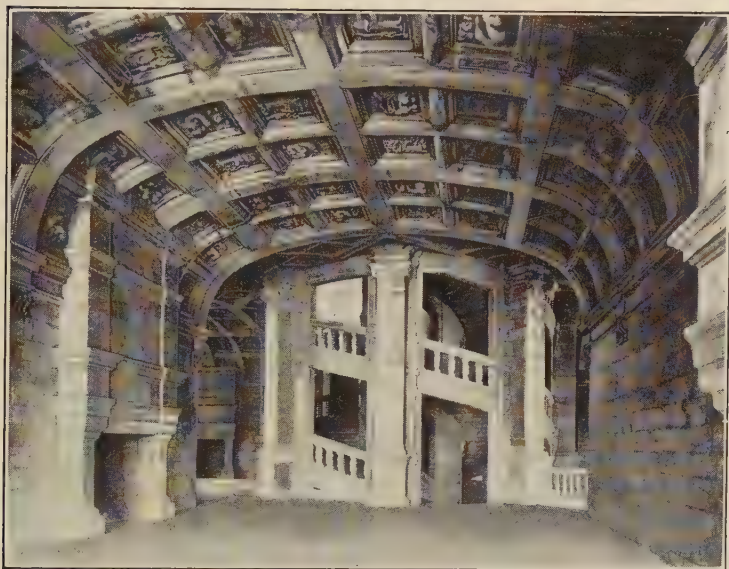


FIG. 55. STAIRCASE, CHÂTEAU DE CHAMBORD

turally, the striking simplicity of the lower part of the château, in comparison with the wonderful array of profusely ornamented tall chimneys, dormers, and bell turrets that surround the graceful lantern, Fig. 56, in which the staircase terminates, is strongly accentuated.

122. Hunting Loóge of Francis I.—Fig. 57 illustrates this small example of early French Renaissance art which formerly stood in the forest of Fontainebleau, but was subsequently removed to Paris. The Gothic influence shown in the windows of the upper floor and the weakness of the abutments between the arches of the lower arcade are noticeable.

123. Church of St. Etienne du Mont.—The Church of St. Etienne du Mont, said to date from the twelfth century, was

originally a chapel connected with the abbey of St. Geneviève and stood within its walls. Enlarged in the year 1491, the church

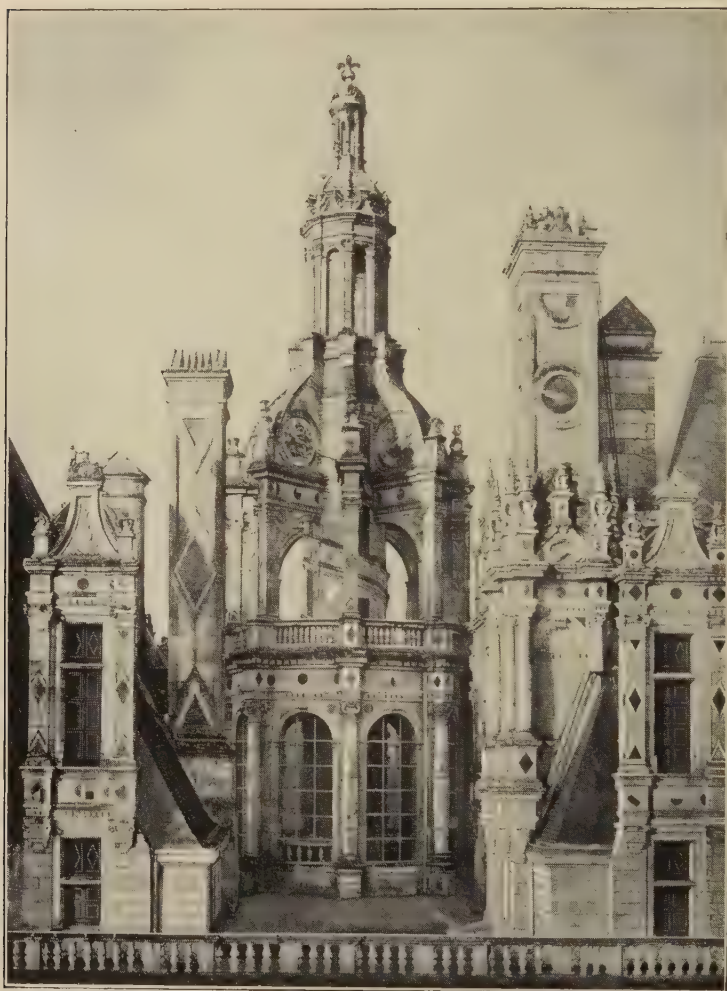


FIG. 56. LANTERN, CHÂTEAU DE CHAMBORD

was practically rebuilt in 1537, but the portal and upper stage of the tower were not added until the early part of the seventeenth century. As will be seen on reference to the view of the western



FIG. 57. HUNTING LODGE OF FRANCIS I



FIG. 58. CHURCH OF ST. ETIENNE DU MONT, PARIS

front, Fig. 58, the façade presents a very strange mixture of Italian and Gothic detail, in which, mediaeval and classic forms are placed side by side in the most curious manner.

124. The Louvre.—A castle or royal residence stood on the site of the palace of the Louvre at an early period of the French monarchy. This old building was fortified by Philip Augustus in 1200, and subsequently enlarged by Charles V, but the present palace, shown in plan in Fig. 59, dates from the reign of Francis I,

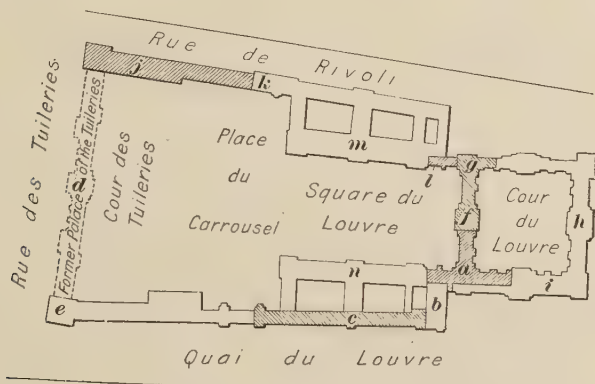


FIG. 59. PLAN OF THE LOUVRE, PARIS

who erected the southern half of the western side of the old court of the Louvre marked *a* in the plan, after the designs of Pierre Lescot, of which the central portion is shown in Fig. 60. The work of rebuilding was continued during the reign of Henri II, 1547 to 1559, and, after the death of that king, by his widow Catherine de Medici, under whom the south portion of the west side was completed during the short reigns of her three sons, Francis II, Charles IX, and Henri III. A one-story building *b*, designed by the architect Chambiges, called the Petite Galerie, was added to the Louvre by the queen-mother, who then proceeded with the erection of the Grande Galerie, *c*, which was to connect the Louvre with the old Tuileries Palace *d*.

125. Henri IV, who reigned from 1589 to 1610, added a second story to both the Petite Galerie and the Grande Galerie, the latter being extended to the Pavillon de Flore *e*, which formed the south

termination of the façade of the Tuileries. Henri's successor, Louis XIII, 1610 to 1643, continued his father's work. During this reign the west wing, including the northern part and the central feature *f*, known as the Pavillon de l'Horloge, was completed by the architect Lemercier and a new north wing *g*

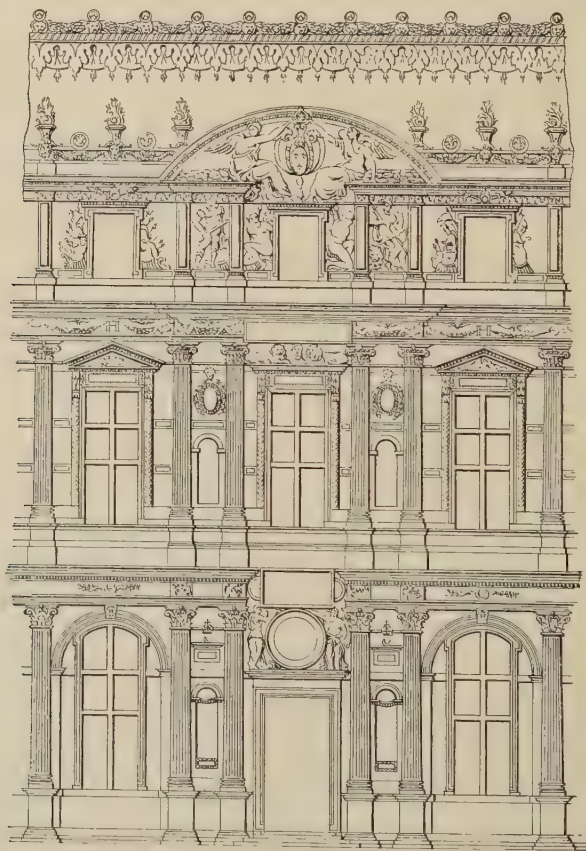


FIG. 60. CENTRAL PORTION OF FAÇADE OF THE OLD LOUVRE

commenced. Under Louis XIV, 1643 to 1715, the new north wing was completed and the great east façade *h* erected after the designs of the architect Leveau, the immense colonnade of Corinthian columns being subsequently added by Claude Perrault, who also designed the façade *i* toward the river.



FIG. 61. EAST FAÇADE OF THE LOUVRE



FIG. 62. CHURCH OF THE SORBONNE, PARIS

126. The completion of the Louvre was not further proceeded with until the reign of Napoleon I, who, in the year 1805, ordered a thorough restoration of the palace and instructed his architects, Perrier and Fontaine, to proceed with the construction of a north connecting gallery *j* between the Tuileries and the Louvre, and this work had been completed as far as the Pavillon de Rohan *k*, and also the portion *l*, when the Emperor was deposed. In 1852 Napoleon III employed the architects Visconti and Lefuel to extend the north gallery *m*, already commenced by Napoleon the Great, toward the Square du Louvre, and to add a corresponding south gallery *n*. The huge buildings of the Louvre, in conjunction with the now destroyed Palace of the Tuileries, constituted the largest and most palatial structure in the world. They consisted of two main divisions, namely, the old Louvre, the four wings *f*, *g*, *h*, and *i* of which enclose the large east court, or Court of the Louvre, and the new Louvre, comprising the two palaces abutting on the north and south sides of the Square du Louvre and the north and south wings fronting the Rue de Rivoli and the Quai de Louvre that extend westward to the end pavilions of the former façade of the Tuileries.

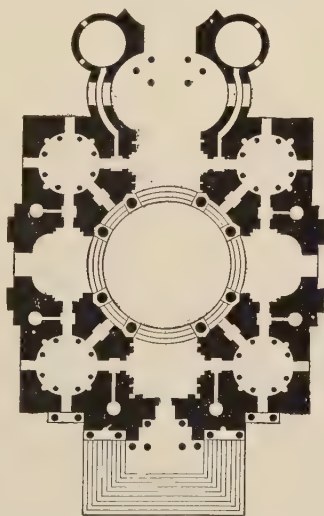


FIG. 63
PLAN OF DÔME DES INVALIDES, PARIS

127. Church of the Sorbonne, Paris.—Commenced in 1635, after the designs of Lemercier, this church remained in an unfinished state until 1659. Its street façade, Fig. 62, consists of a pedimented structure, two stories in height, embellished with Corinthian columns and Composite pilasters. The entrance doorway is placed in the wide central bay of the columniated ground floor. Above is a large semicircular-headed panel within which are two large figures in low relief. A well-proportioned and



FIG. 64. DÔME DES INVALIDES, PARIS

extremely graceful dome, studded with small canopied *lucarnes*, or openings, and surmounted by a lantern is supported by a lofty octagonal drum.

128. Dôme des Invalides.—The Dôme des Invalides, shown in plan in Fig. 63, and externally by the view, Fig. 64, is a second, or auxiliary, church to that of St. Louis des Invalides. This auxiliary church was built by J. H. Mansart in 1693 to 1706, as the crowning feature of the huge block of buildings known as the Hôtel des Invalides, that had been erected earlier in the reign of



FIG. 65. THE PANTHÉON, PARIS

Louis XIV after the designs of Libéral Bruant. The Dôme des Invalides comprises a square-shaped structure, with circular chapels at each angle, enclosing a Greek cross. A stately dome, embellished with gilded reliefs and rising to a total height of 344 feet, is placed over the crossing, Fig. 63. The centre of the interior is now occupied by an open circular crypt containing the tomb of Napoleon, above which rises the dome supported by four massive piers pierced by short passages and relieved with columns.

129. The Panthéon, Paris.—The Panthéon or church of Sainte Geneviève at Paris, shown in Fig. 65, was erected about the middle of the eighteenth century after the design of the well-known architect Soufflot, 1713 to 1781. From its plan, Fig. 66, it is seen to be cruciform in shape, with four nearly equal arms, a

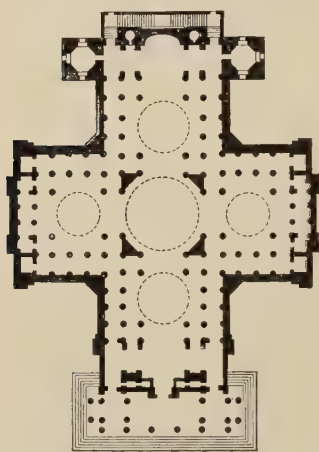


FIG. 66
PLAN OF THE PANTHÉON, PARIS

large entrance portico, and a small shallow apse. The interior of the church, including the choir and transepts, has double-colonnaded aisles with galleries over. Each arm of the cross is covered with a flat domical vault supported by large deeply recessed arches as seen in Fig. 67.

130. The dome, 272 feet in height, and over 75 feet in diameter, rests on a lofty circular drum surrounded by an open colonnade of Corinthian columns. Placed over the centre of the crossing of the nave and transepts, as originally constructed, this great dome rested on columns, but these proving too weak to sustain the weight of the superstructure the present piers were substituted.

131. St. Sulpice.—Built on the site of a twelfth-century parish church, the church of St. Sulpice was commenced during the reign of Louis XIV, after a design supplied by the architect Gamart, continued by Levau and others, and finally completed in 1733 to 1749 by the Florentine architect Servandoni, 1695 to 1766. Its façade, Fig. 68, consisting of a portico, composed of a double range of Doric columns supporting a colonnaded gallery of the Ionic order, is surmounted by a balustraded entablature. The two towers that flank the façade are of unequal height. Planned in the form of a cross the church is 462 feet long, 183 feet wide, and 108 feet high. The spherical vaulting of the interior, Fig. 69, is supported on arcades adorned with massive Corinthian pilasters.



FIG. 67. INTERIOR OF THE PANTHÉON, PARIS



FIG. 68. CHURCH OF ST. SULPICE, PARIS



FIG. 69. INTERIOR OF CHURCH OF ST. SULPICE, PARIS

132. Palace of Versailles.—The immense palace of Versailles, a plan of which is given in Fig. 70, was commenced by the architect Louis Leveau and completed by J. H. Mansart toward the close of 1688. It owes its origin to a small hunting box designed by Lemercier, in 1624, for Louis XIII, the quaint brick and stone façade of which is still to be seen in the Cour de Marbre, or Marble Court *a*, of the present building. By the special instructions of Louis XIV this small structure was carefully preserved when the immense additions which converted the hunting box into a palace were proceeded with. Ultimately, the Palace of Versailles grew into a building of such enormous size that not only was Louis XIV enabled to make it the seat of government with the council chamber at *h*, but he was also able to provide within its walls residential accommodation for his entire court. Its plan comprises the main structure built round the north, south, and west sides of the Marble Court, mainly the work of Leveau, and two huge north and south wings, *A* and *B* respectively. As finally completed the palace is said to have contained room for 10,000 inmates. Its long façade toward the park and gardens is 630 yards in length. The pavilions, marked *b* in the plan and built in the neo-classic style, on each side of the Cour Royal *c*, were erected, respectively, by Gabriel under Louis XV and by Dufour under Louis XVIII

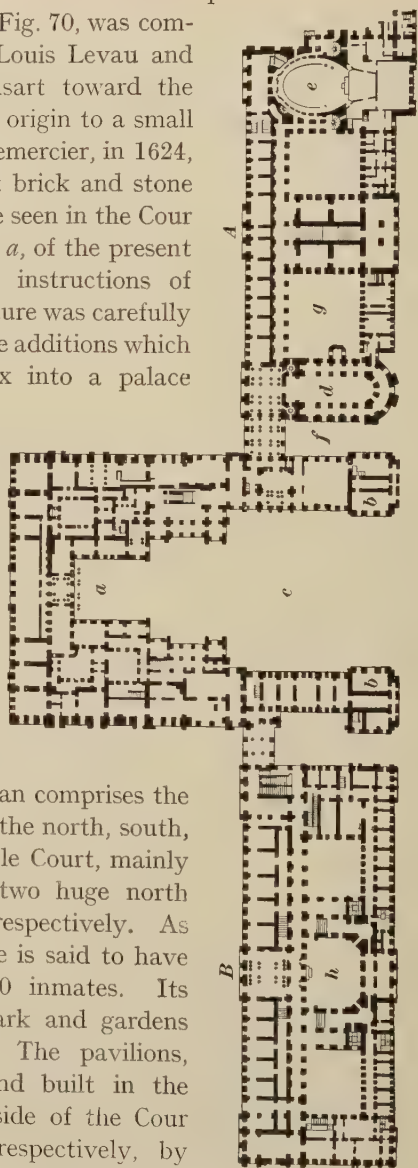


FIG. 70. PLAN OF PALACE OF VERSAILLES

The chapel is shown at *d* in Fig. 70, and also in Fig. 73, where at the left is seen one of the pavilions *b*, Fig. 70. Gabriel also commenced the theatre *e*, placed at the end of the north wing of the palace and completed in 1770.

133. The Chapel of Versailles, of which a plan is given in Fig. 71, and sections in Fig. 72, is situated at *d* between the Cour de la Chapelle *f* and the Cour de la Smalah *g*, Fig. 70. It was commenced by the architect Mansart in 1699, and completed by Robert de Cotte in 1710, and consists of a rather narrow nave, Fig. 71, with a circular termination at the east end behind which the aisles are continued in the manner of an ambulatory. Below the gallery formed at both sides and ends of the chapel, Fig. 72, a long, continuous arcade, consisting of semicircular-headed arches, supported by square piers, separates the nave from the aisles. This arcaded treatment is continued through the gallery by a range of lofty Corinthian columns carrying a continuous entablature, above which the barrel-shaped roof is intersected by the cross-vaultings of attic windows. The lean-to roofs of the aisles are concealed by the main

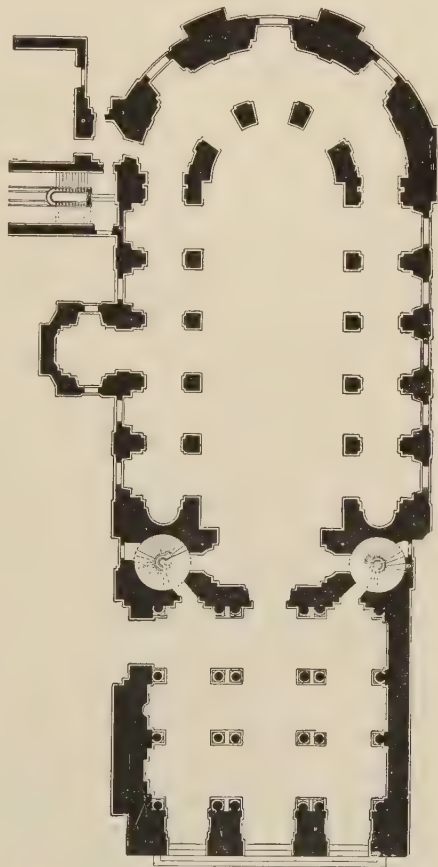


FIG. 71. PLAN OF CHAPEL OF VERSAILLES

entablature of the external walls, and the well-designed flying buttresses, in the form of ramps, are further evidence of the Gothic origin of the design.

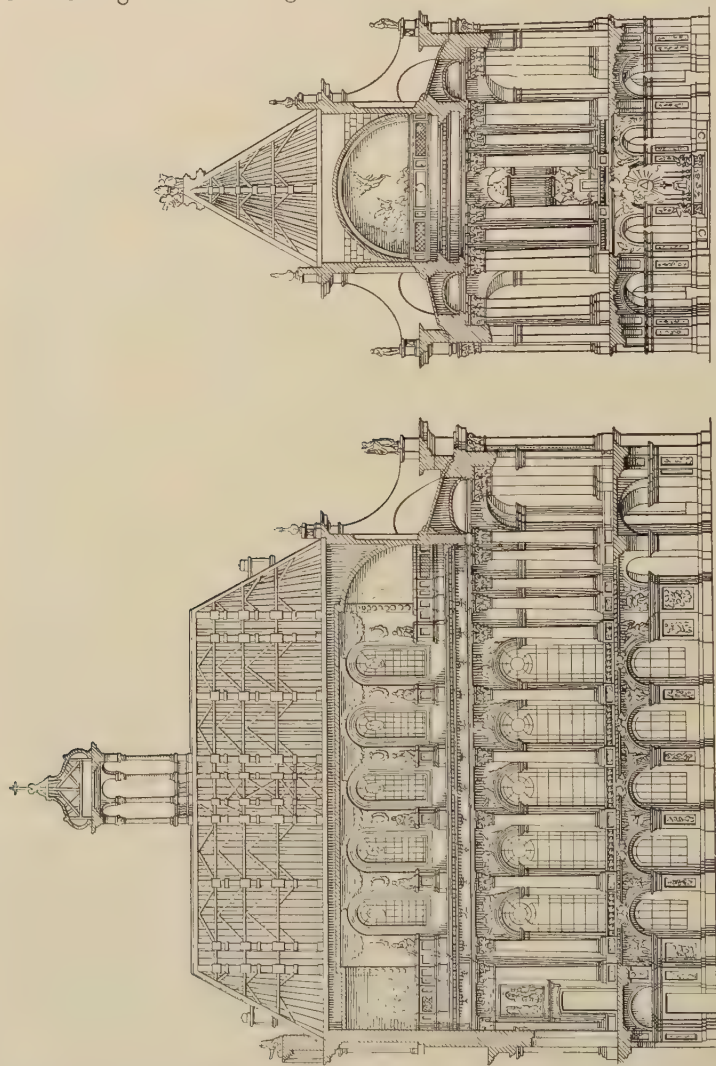


FIG. 72. TRANSVERSE AND LONGITUDINAL SECTIONS OF CHAPEL, VERSAILLES

134. Two vestibuled entrances give access to the chapel; of these the principal, that on the gallery level, forms one of the



FIG. 73. PORTION OF NORTHERN WING, VERSAILLES



FIG. 74. INTERIOR OF CHAPEL AT VERSAILLES



LE GRAND TRIANON, VERSAILLES

magnificent salons of the north wing of the château. The second entrance, at the ground-floor level, is through the fine Ionic colonnade that connects the chapel court and the palace gardens. Internally, the decorations of the chapel, see Fig. 74, were carried out on the most lavish scale. The magnificent paintings that adorn the ceilings of the nave and galleries were by the best French artists of the day; the altar raised on three steps is of marble and gilded bronze. The spandrels of the arches and the panels of the piers are filled with sculpture in low relief and the balustrade between the panelled and carved pedestals of the lofty Corinthian columns is gilded, Fig. 74.

135. Externally, the chapel, Fig. 73, comprises a low ground floor, and a lofty first floor adorned with pilasters of the Corinthian order between which are the large circular-headed windows that light the gallery. Above the well-designed entablature, and set back a considerable distance from the face of the main walling, is a fine and well-proportioned attic story terminated by a richly ornamented high-pitched roof. The Palladian pavilion to the left of the chapel, seen in Fig. 73, is a later addition to the north wing of the palace made by the architect Gabriel in the reign of Louis XV.

136. Petit Trianon at Versailles.—The charming example of eighteenth-century French architecture known as Petit Trianon, Fig. 75, is situated at the extremity of the garden of Grand Trianon at Versailles. Constructed for Louis XV by the architect Jacques Gabriel about the year 1764, the refined scholarly detail and excellent proportions of this small building are beyond all praise. Planned in the form of a square, the sides of which are about 72 feet in length, the façade comprises a rusticated basement and two upper stories, grouped together by Corinthian columns and pilasters and crowned by a well-designed cornice and balustrade.

137. Arc de Triomphe du Carrousel, Paris.—Erected by the architects Percier and Fontaine in 1806, to commemorate Napoleon's victories, the design of this triumphal structure, Fig. 76, is based on that of the arch of Septimius Severus at Rome.

The archway, which covers an area of about 60 feet by 20 feet and is between 40 and 50 feet in height, consists of a wide central and two small lateral openings. Eight Corinthian columns of red Languedoc marble with bronze capitals and bases support marble statues, representing the soldiers of the empire, placed above the entablature. The lofty attic is surmounted by a *Quadriga*, or chariot drawn by four horses.

138. The Madeleine, Paris.—This church is the fourth structure of its kind erected on the site since the beginning of the



FIG. 76. ARC DE TRIOMPHE DU CARROUSEL. PARIS

thirteenth century. Commenced in 1764 by Constant d'Ivry, the original design was altered in 1777 by his successor, Couture, and the work altogether suspended during the subsequent revolutionary era. At a later period Napoleon determined to transform the Madeleine into a Temple of Glory, and instructed the architect Vignon to complete the building in that form; but the emperor's



FIG. 77. THE MADELINE, PARIS



FIG. 78. THE LOUVRE, PARIS

project was frustrated by the disastrous political events that followed. In 1815 Louis XVIII began to convert the unfinished temple into an expiatory church to contain monuments of Louis



FIG. 79. PAVILION RICHELIEU, THE LOUVRE

XVI and Marie Antoinette. The church, Fig 77, as finally completed during the reign of Louis Philippe after designs by Huvé, stands on an elevated platform approached at each end by a flight of twenty-eight steps extending throughout the

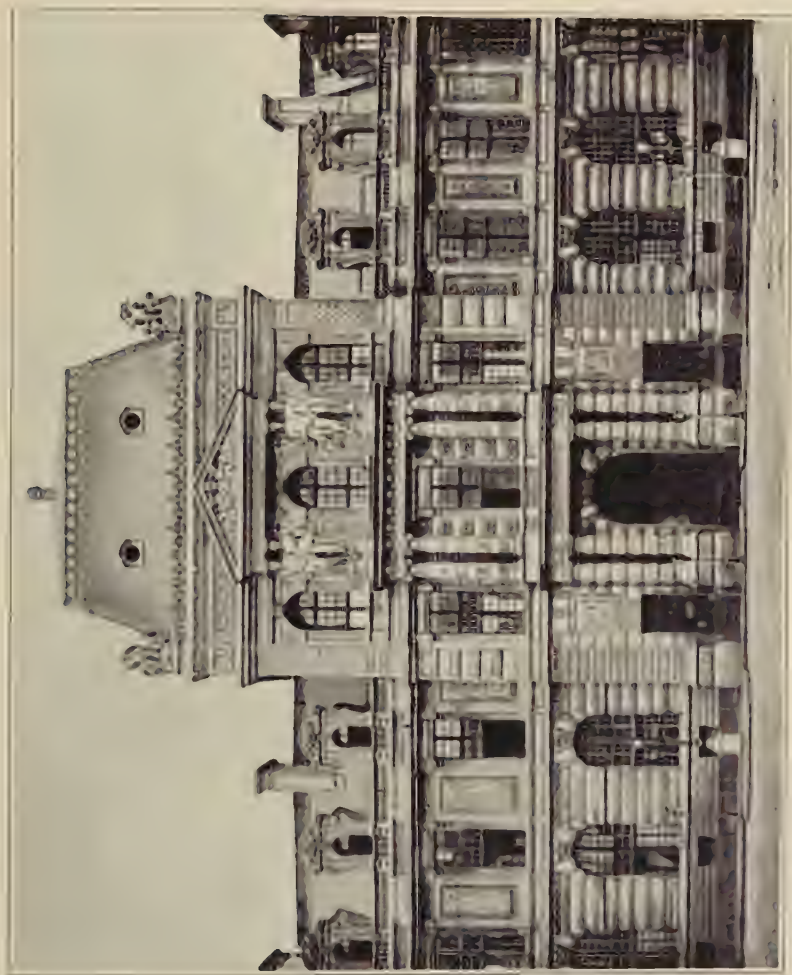


FIG. 80. NEW PAVILION, THE LOUVRE

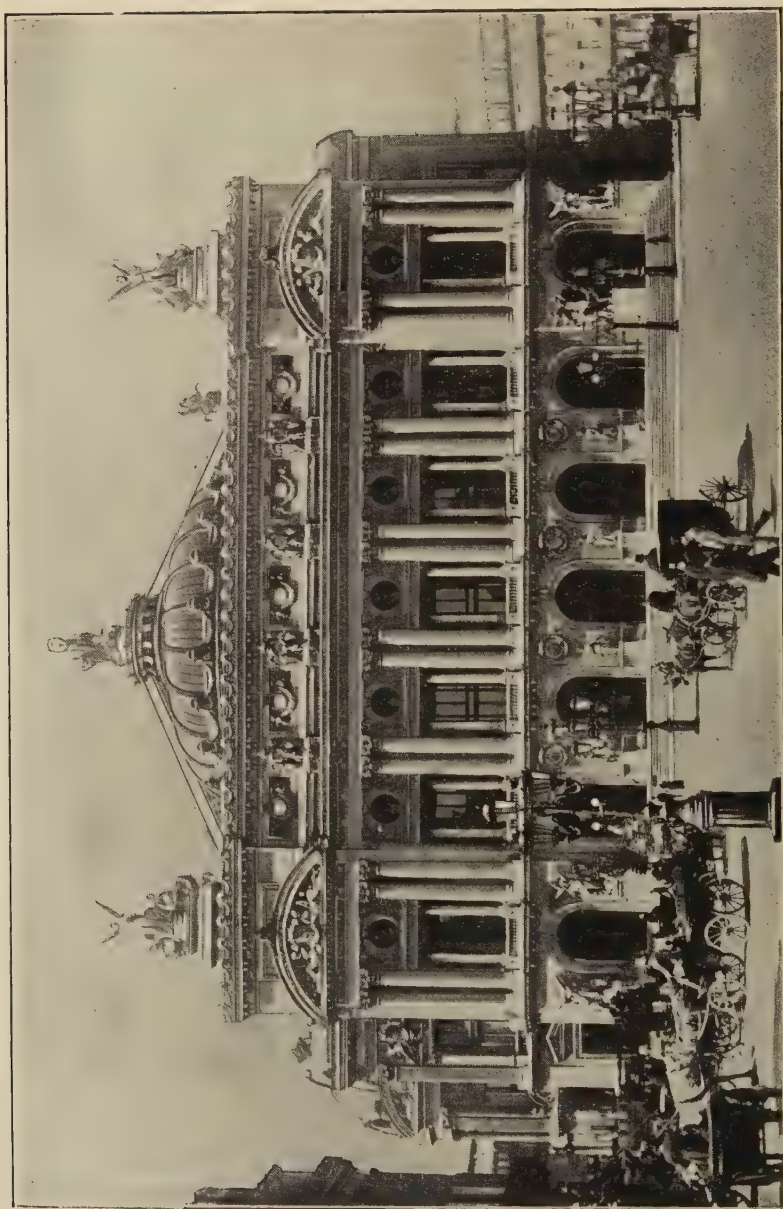


FIG. 81. THE OPERA HOUSE, PARIS

length of the façade. It is entirely surrounded by an imposing colonnade of massive Corinthian columns. There are no windows, but light is admitted to the interior of this beautiful example of revived Roman art through three shallow domes.

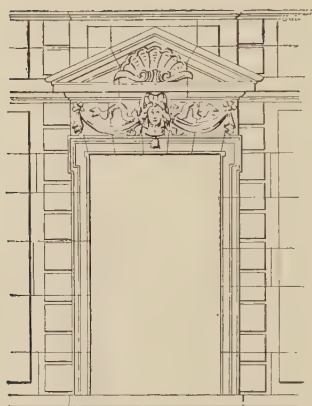
139. Modern Additions to the Louvre.—In 1852 the completion of the palace of the Louvre was commenced after the designs of Visconti, who, on his death in 1853, was succeeded by the architect Lefuel. The general plan included the erection of two vast lateral piles of buildings projecting from the northern and southern galleries to form the eastern boundary of the Place du Carrousel, Fig. 59, and returned in long frontages containing three pavilions to join the old western façade of the Louvre. The general effect of this wonderful group of buildings, as seen from the Place du Carrousel, is shown in Fig. 78. Fig. 79 shows the pavilion Richelieu, the central feature of the new northern façade to the Square du Louvre, and another of the new pavilions is illustrated in Fig. 80.

140. The Opera House, Paris.—The sumptuous Opera House at Paris, the principal façade of which is illustrated in Fig. 81, comprises a structure of three stories. On the ground floor is the huge portico, approached by a broad flight of steps, arcaded with seven archways, and embellished by sculptured figures. The first floor, designed as a loggia, has monolithic Corinthian columns supporting the main entablature, and the façade is crowned by a richly decorated attic.

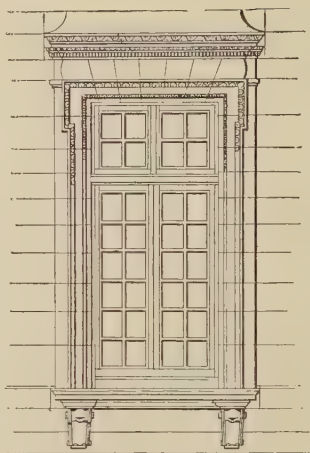
DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

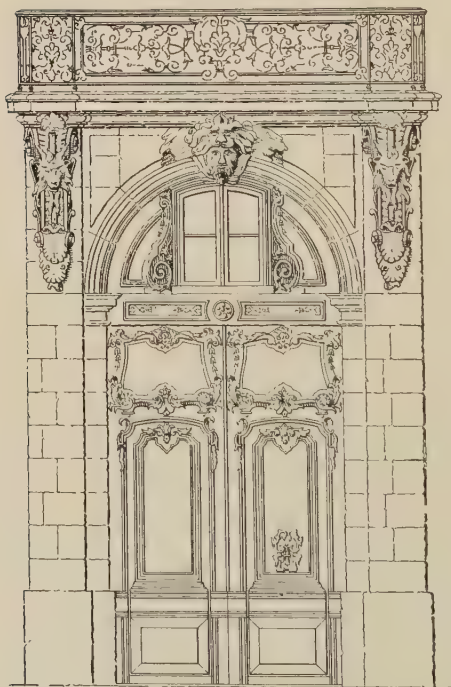
141. Plans.—The plans of the early Renaissance châteaux were based on those of the mediaeval castle. In later examples of domestic buildings the planning became more uniform and symmetrical, and the Gothic form of earlier examples was abandoned



(a)



(b)



(c)

FIG. 82

142. Walls.—At first narrow pilasters, panelled and carved with free enrichments, were used for the adornment of the external walls, which were also relieved with large panels, as at the Castles of Blois, Fig. 49, and Chambord, Fig. 54. Dormer windows, chimneys, and gables were lavishly ornamented and enriched, as seen in Fig. 56.

143. Roofs.—For secular and domestic buildings the high-pitched roof of the Gothic period was generally retained, as may be seen from Figs. 49

and 52. When the style arrived at its full development in France the low roofs of the churches were usually concealed behind heavy entablatures, as in Fig. 65, although in earlier examples the high-pitched roof is a prominent feature, as in Fig. 73. A form of roof especially characteristic of French Renaissance architecture, known as the Mansard roof, from its originator J. H. Mansart, consists of a roof with a very steep pitch crowned by one of a lower pitch. An example of this kind of roof is seen in Fig. 73 in the first house of the

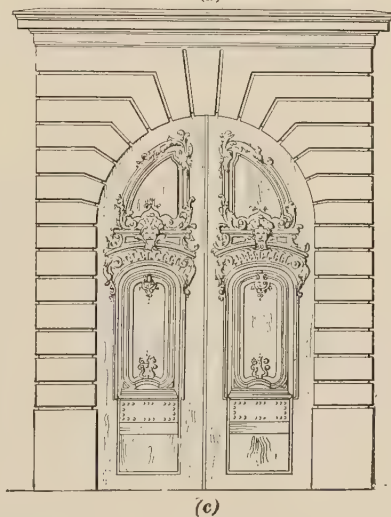
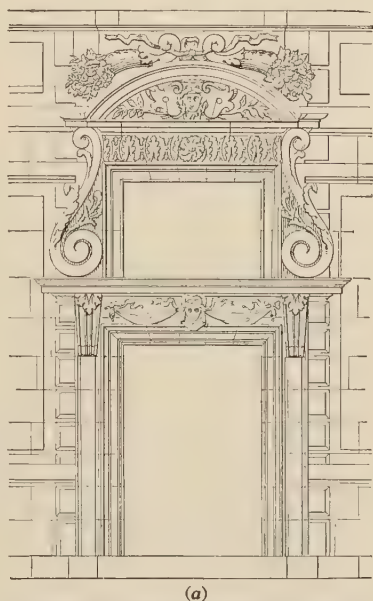
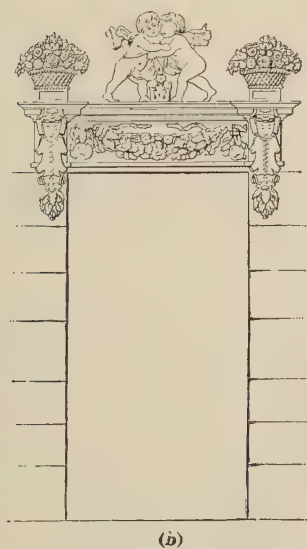


FIG. 83

group of buildings east of the Chapel at Versailles.

144. Columns.—When columns first came into general use the mouldings, details, and general proportions of the Roman orders were not closely followed. But when the Classic period of the Renaissance in France was fully developed, columns and their entablatures were constructed in conformity with the rules laid down by Vignola and Palladio.

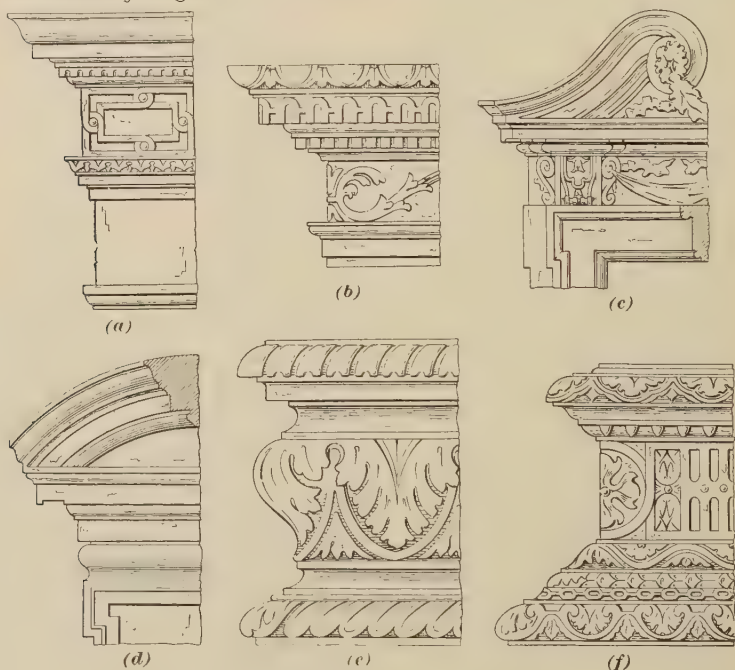
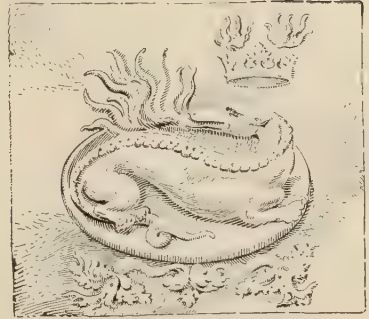


FIG. 84

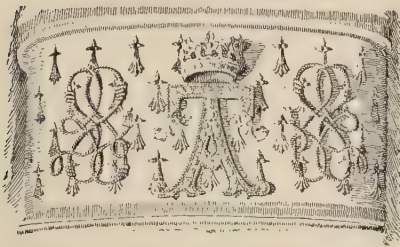
145. Openings.—In the Early period arched openings were usually either semicircular or elliptical in form, as seen in Figs. 57 and 48. But with the development of Classic art during the Middle period trabeated openings and other characteristics of ancient art were freely reproduced in France, with the result that the picturesque grouping and varied form of the doors and windows of the early French Renaissance buildings gave place to regularity and severity of design. During the Late, or Rococo, period the prevalent broken and curved mouldings were applied for the embellishment of the openings.



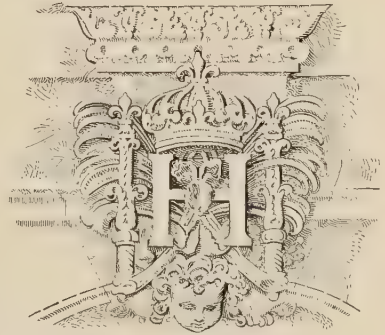
(a)



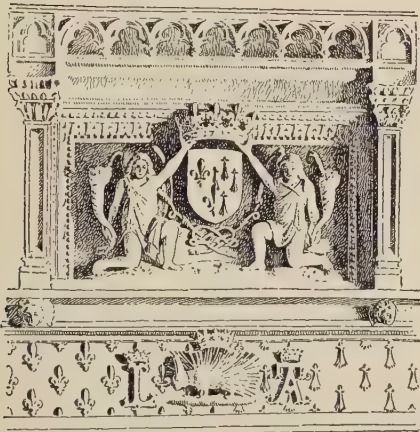
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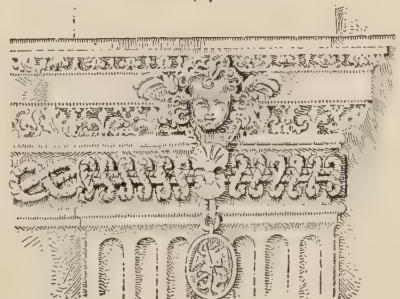
(c)



(d)



(e)



(f)

146. Square-headed windows with panelled mullions and transoms, an example of which is seen in Fig. 57, were also used during the Early period of French Renaissance art. Another

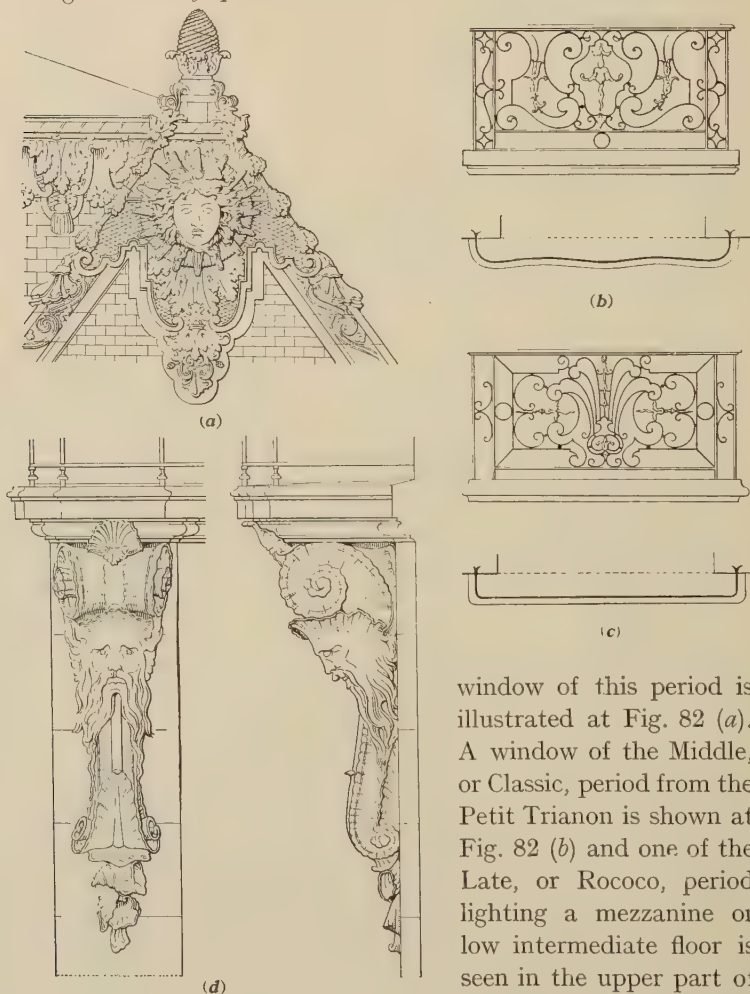


FIG. 86

Fig. 82 (c). An example of French Renaissance doorways of the Early period is shown in Fig. 83 (a) and of the Classic and Rococo periods in Fig. 83 (b) and (c), that at (b) illustrating an

window of this period is illustrated at Fig. 82 (a). A window of the Middle, or Classic, period from the Petit Trianon is shown at Fig. 82 (b) and one of the Late, or Rococo, period lighting a mezzanine or low intermediate floor is seen in the upper part of the doorway shown in

internal doorway of a Parisian house of the time. The lower part of Fig. 82 (c) is another example of a door of the Rococo period.

147. Mouldings.—In the early days of the Renaissance in France, mouldings such as cornices and string-courses were merely free adaptations of ancient Roman profiles, but in the best examples of the French Classic period they are carefully detailed from ancient models. Examples of Early Renaissance mouldings are shown in Fig. 84. The general tendency of the period toward a too profuse enrichment of mouldings is seen in the illustrations (a), (b), and (f). Of the pedimented heads shown at (c) and (d) the former is not unduly enriched, and the latter is entirely unadorned with carving. The ornamentation of the moulded plinth (e) is judiciously arranged, as the carved portions are separated by plain hollows, and greater value is thus given to the enriched parts. In the example shown at (f) all surfaces whether moulded or plain are covered with enrichments with the most disastrous result.



FIG. 87

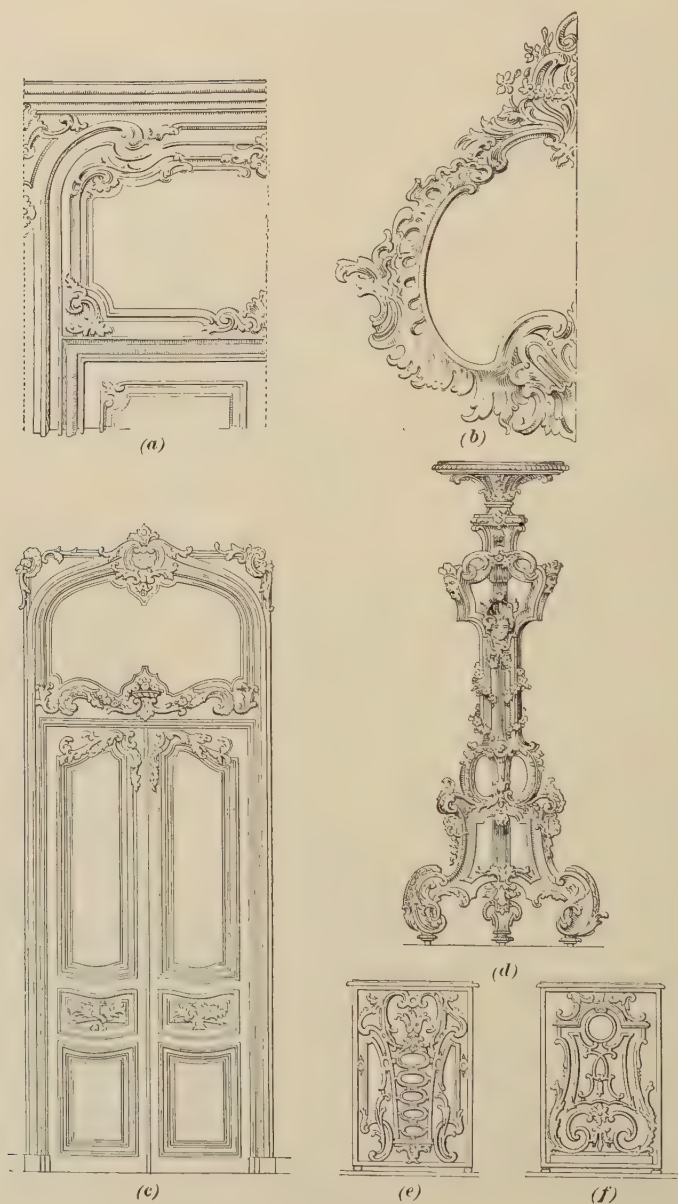


FIG. 88

148. Ornamentation.—The sculptured decoration of the Early period exhibited a rich variety of ornamentation, made up of incongruous elements, such as heraldic badges and initials, shells, plant and floral forms, cartouches, grotesques, trophies, figures,

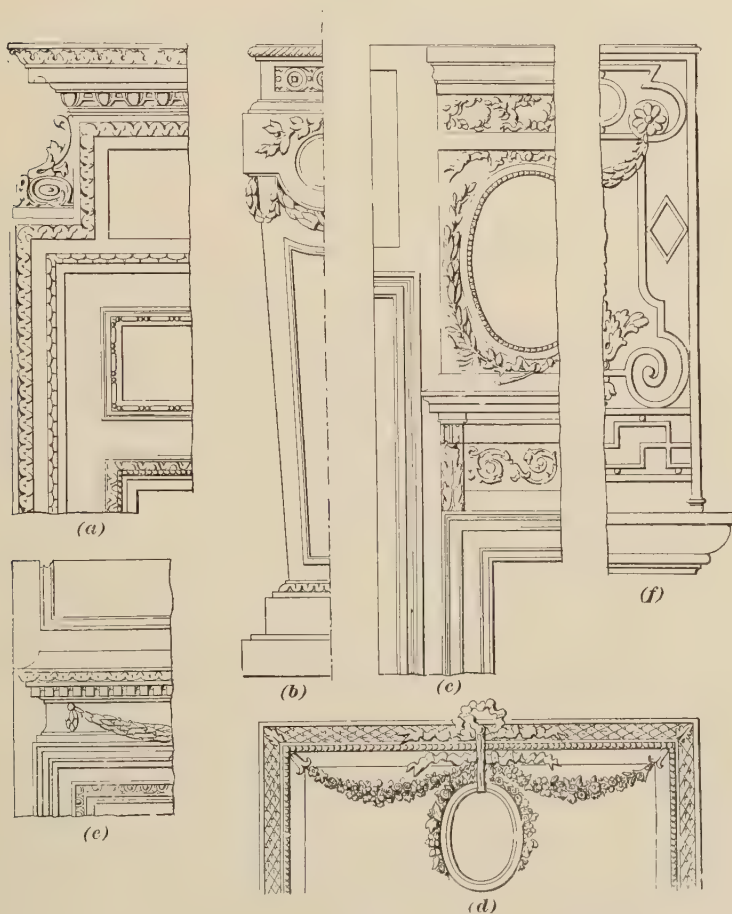


FIG. 89

and strap-work. Examples of heraldic badges and initials, taken from the Château de Blois, are shown in Fig. 85 (a), (c), and (e). Acanthus-leaf motives were usually applied for the enrichment of the capitals of pilasters and columns, the banded

shafts of which were often richly adorned with the customary ornamentation of the period. Under the direction of Primaticcio and other Italian artists a new school of decorative painting, exemplified by the rich modelled stucco ornamentation of the palace of Fontainebleau, began during the early Renaissance. Enrichments, of the time of Francis I and Henry II, are seen at (b), (d), and (f), Fig. 85, and illustrate the varied nature of the decorations used during the early Renaissance in France.

149. Examples of the ornamentation of the Middle period are found in the stately galleries of Louis XIV's palace at Versailles, which were decorated under the direction of Charles le Brun, 1619 to 1690, who personally designed the magnificent enrichments of the Galerie des Glaces and exercised general control over other artists' work. Fig. 86 illustrates some characteristic examples of the ornamentation of this period, of which (a) shows some ornamental lead work from the roof of the Galerie d'Apollon at the Louvre, (b) and (c) wrought-iron balconies from old Parisian houses, and (d) and (e) the front and side elevations of a carved stone console. Fig. 87 shows a wall panel of the period from the Hôtel Castellanne, Paris.

150. A reaction against Le Brun's formal and grandiose school of ornamentation set in during the reign of the succeeding monarch, Louis XV, when a more flowing and less architectural distribution of ornament took place and the salons and galleries of palaces and mansions assumed the aspect of the room presented in Fig. 94, and belonging to a German palace, but reproducing all the characteristics of French Rococo art. Various details of the ornamentation of this decadent period of art are shown in Fig. 88, in which examples of the wall panelling and mural enrichments of the time are shown at (a) and (b), an internal doorway at (c), a lamp standard at (d), and wrought ironwork at (e) and (f). During the period of the Revolution and Empire there was a return to the purer form of classic architecture, and examples of the ornamentation of this and subsequent periods of French art are shown in Fig. 89, in which (a) illustrates a doorway from the Hôtel de Ville of Bordeaux (b) a characteristic example of a pedestal, (c) a fireplace, (d) a door head, and (f) an ornamental iron panel.

GERMAN AND AUSTRIAN RENAISSANCE

NOTES ON GERMANY AND AUSTRIA

HISTORICAL AND SOCIOLOGICAL

151. The Reformation.—Luther's doctrines spread very rapidly in Germany under the protection extended to the Reformed Church by the principal Lutheran electors. In the religious controversies of the day the Emperor Charles V sided with the pope, but although a devout Catholic at heart, the cares of foreign wars and the internal complications caused by the division of his kingdom into Catholic and Protestant camps militated against the complete success of the papal claims.

152. Peace of Augsburg.—Eventually under the terms of the Peace of Augsburg, 1555, it was agreed that each prince could tolerate, or refuse to tolerate, any form of religion he chose within his own dominion. In the following year Charles V suddenly resolved to divide his vast possessions between his brother Ferdinand of Austria and his son Philip and to retire into private life. Accordingly he entered the monastery of St. Just, in Spain, where he died in 1558. During the latter part of this century Germany ceased to be the pivot of European history, which became centred on France and the Netherlands.

153. The Thirty Years' War.—The early part of the seventeenth century saw the commencement of the great Thirty Years' War, 1618 to 1648, when the Bohemians rose in defence of their religion, and France, Spain, and Sweden became involved in the struggle. Ultimately, after successive invasions of Bavaria by the French and Swedish troops, peace was signed at Westphalia.

But the Thirty Years' War left Germany an empire only in name. It destroyed the unity of the country, weakened its prestige and resources, and seriously reduced its population.

154. Rise of Prussia.—From the middle of the seventeenth century to the beginning of the eighteenth century Germany was divided into a large number of states, almost altogether independent of any central authority. In 1701 Frederick III, Elector of Brandenburg, assumed the title of King of Prussia, and in 1714 George Louis, Elector of Hanover, ascended the English throne as George I. With the commencement of the eighteenth century came the war of the Spanish Succession. In this struggle the Protestant powers of Europe, fearing lest the union of France and Spain under the house of Bourbon might destroy the balance of power, sided with the emperor in support of the claims of the Archduke Charles.

155. Maria Theresa and Frederick the Great.—On the death, in 1740, of the Emperor Charles VI, his daughter, the great Empress Maria Theresa, succeeded to the hereditary dominions of the house of Austria. Her succession had been agreed to under the Pragmatic Sanction, but now all the great powers, except England, joined to rob her of the inheritance. The peace of Aix-la-Chapelle, in 1748, closed this unjust war that was notable for the heroism of Maria Theresa and for the military genius displayed by her chief opponent, Frederick the Great of Prussia. After eight years of peace, war again broke out between the Empress and Frederick, during which Austria, France, Russia, Saxony, Sweden, and Poland were allied against Prussia. But the result of this conflict, known as the Seven Years' War, was to cause Prussia to become one of the five great powers of Europe and the rival of Austria in influence and resources. Henceforth the Holy Roman Empire was divided between these two countries round which the minor German states were grouped.

156. Effects of the Wars.—The effect of these long wars was to destroy German nationality. Famine, pestilence, and the sword converted vast tracts of country into a wilderness. Devastated towns and villages long remained empty, and numberless petty

states sprang up, each with its own court, coinage, and customs, in which the ceremonials and manners of the French Court were copied. Arts, trade, literature, and manufactures were paralyzed, while the petty princes ground down their subjects by intolerable taxation.

157. Period of Recuperation.—In Prussia, Frederick did his utmost to repair the waste of the terrible years of warfare. He rebuilt houses, drained marshes, constructed roads and canals, and encouraged and developed trade. With equal zeal and industry his great rival, the Empress Maria Theresa, devoted herself to the improvement of her people and country by removing feudal hardships and ameliorating the condition of the serfs, reforming ecclesiastical abuses and fostering manufacture and commerce.

158. Awakening of Art and Literature.—It was not until the eighteenth century that Germany was able to boast of any great advance in literature, but the works of the brilliant German writer Lessing, 1729 to 1781, followed by those of the great scholar, Winckelmann, tended to create a taste for antiquity and raised architecture from the decadent stage to the purest period of the Germanic Renaissance. This literary influence led to the erection of some good examples of classic art, such as the Valhalla at Ratisbon and the Ruhmeshalle at Munich.

ARCHITECTURAL PERIODS

DISTINCTIVE FEATURES

159. The Early Period.—When first imported into Germany, in the sixteenth century, the influence of the Italian Renaissance caused no sudden breaking away from the national architecture of the Middle Ages, but led to the engrafting of foreign details on buildings fundamentally the same in form and arrangement as those of the Gothic style. During this period, which may be termed the *Early period*, of the Germanic Renaissance, the stately façades of the Italian palaces, with their regularity of

outline and strict harmony of proportion, were seldom reproduced. On the contrary, the early Renaissance *châteaux* recalled, both externally and internally, the mediaeval castles of the preceding age, while the tall narrow gables that characterized the Gothic civic dwellings of Germany long remained prominent features of the new style.

160. The Undeveloped Classic Period.—Inasmuch as foreign influence varied in extent in different parts of the country, there was little national unity in the architecture of the German Renaissance ; for while in the west the influence of French and Flemish art is clearly perceptible, that of Italy predominated in the south. On the other hand, the development of the brick architecture of North Germany owes little to external influence. Naturally enough, having regard to the troublous times in which it took root, German and Austrian Renaissance art did not attain the pure classic form that marked the full growth of the Italian revival and, consequently, real classic art is not properly represented in the usual sequence of periods. For the transitional architecture of the Early period was not followed by the erection of many important buildings designed on strictly classical lines, and, in fact, the Baroque may be said to have almost immediately followed the early Renaissance style.

161. The Baroque Period.—The Baroque style is seen at its best in Vienna, a city whose importance as a seat of art dates almost exclusively from the eighteenth century. At Vienna the influence of two great exponents of late Renaissance architecture, Fischer von Erlach, 1656 to 1723, and Lukas von Hildebrand, 1666 to 1745, resulted in the erection of many fine buildings in the Baroque style.

162. The Classic Revival.—When, late in the eighteenth century, classic architecture in Germany arrived at its zenith the best buildings of the period were inspired by Grecian rather than by Roman art. Notable examples are found in the Brandenburg Gate, at Berlin, designed on the lines of the Propylaea at Athens and in the monumental building, erected in 1842, known as the Valhalla, at Ratisbon, in which the Parthenon is reproduced on a smaller scale.

ARCHITECTURAL EXAMPLES

SECULAR AND ECCLESIASTICAL BUILDINGS

163. Castle of Heidelberg.—The Early, or Transitional, period of German Renaissance architecture is shown in the Otto-Heinrichsbau, at Heidelberg, a building as remarkable for its good proportions as for its rich and lavish decorations. Regularly divided by classic pilasters, the windows of this three-storied façade have strongly defined mullions terminating in carved figures. The friezes of the entablatures are profusely decorated with carving, and deep niches with figures relieve the wall spaces of the building which presents a curious fusion of classic regularity and Gothic picturesqueness.

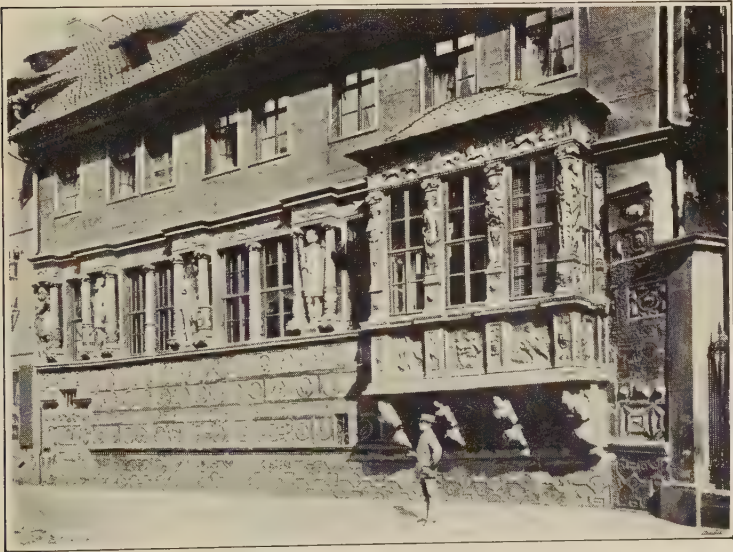


FIG. 90. KAISERHAUS AT HILDESHEIM

164. Kaiserhaus at Hildesheim.—The Kaiserhaus at Hildesheim, Fig. 90, is a good example of the architecture of its period, 1586. Many of the details of this building bear a close resemblance to those of the Castle of Heidelberg, as, for instance, the

boldly carved pilaster mullions of the overhanging window. The niches of this front are filled in with statues of the Roman



FIG. 91. HOUSES AT FRANKFORT, BAVARIA

Emperors and the lower part of the wall is adorned with a number of medallion reliefs.

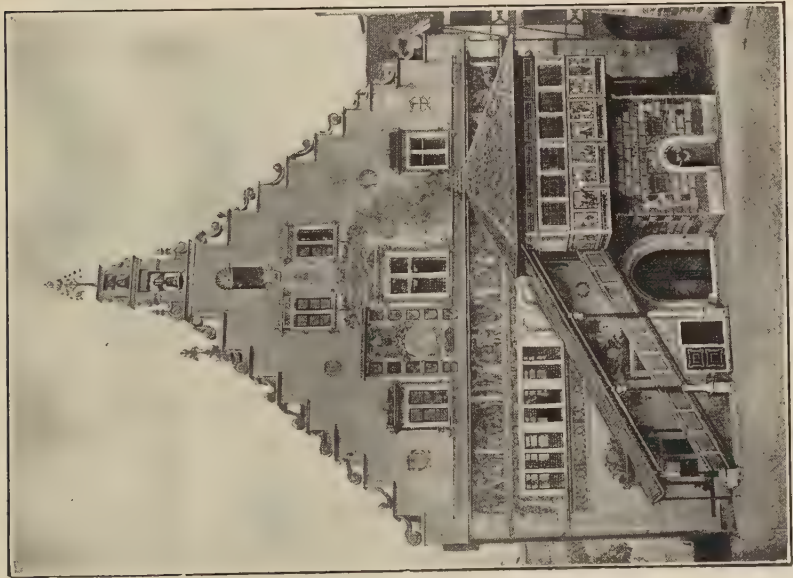


FIG. 92

GERMAN RENAISSANCE HOUSES

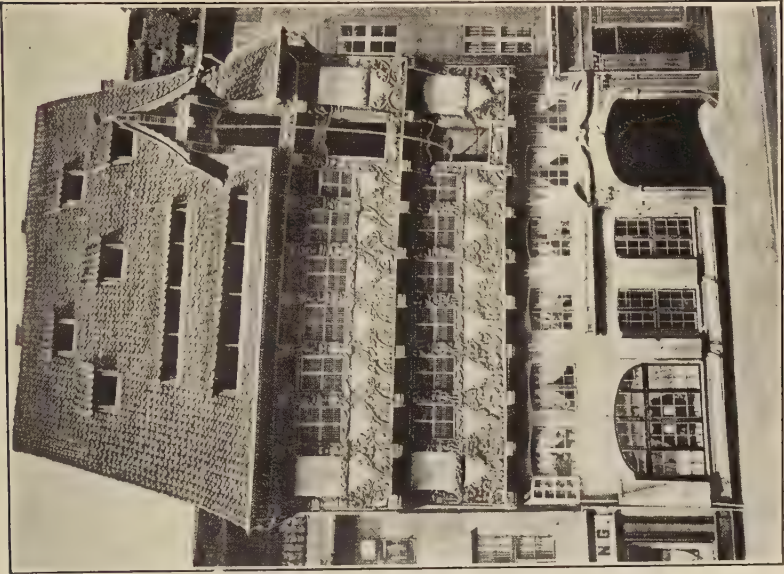


FIG. 93

165. **Renaissance Street Architecture.**—The interesting examples of Renaissance street architecture shown in Fig. 91 are from the town of Frankfort, in Bavaria. The fantastic outline

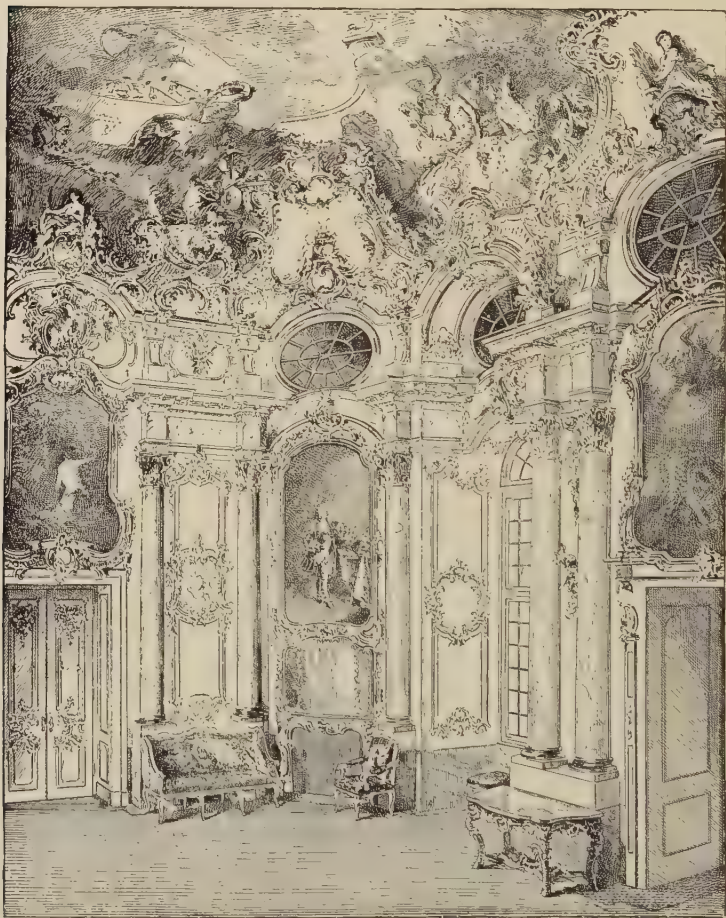


FIG. 94. STATE DRAWING-ROOM IN BRUCKSAL PALACE, BADEN

of the steep narrow gable of the corner house and the lavish enrichment of the wall surfaces are prominent features of this old carved wood front. Other typical examples of German Renaissance street architecture are shown in Figs. 92 and 93.

166. Brucksal Palace.—A corner of the state drawing-room in the Brucksal Palace, Baden, is illustrated in Fig. 94. The decorations of this apartment, Rococo in their nature, reflect the

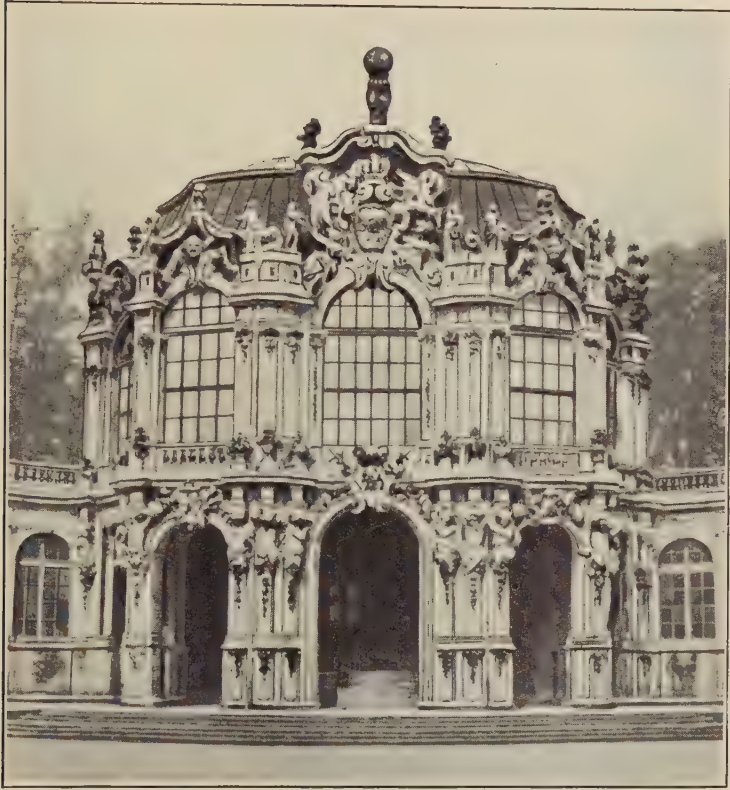


FIG. 95. PAVILION FROM THE ZWINGER, DRESDEN

spirit of the Baroque period, during which walls were adorned with richly carved wall panelling, ceilings painted, and gilding profusely applied for the relief of moulded forms.

167. The Zwinger, Dresden.—The Zwinger at Dresden, shown in Fig. 95, is a Baroque building erected by the architect Pöppelmann between the years 1711 to 1722. It consists of seven pavilions connected by low galleries. Its curved pediments and

florid ornamentation are thoroughly characteristic of the decadent style to which it belongs.

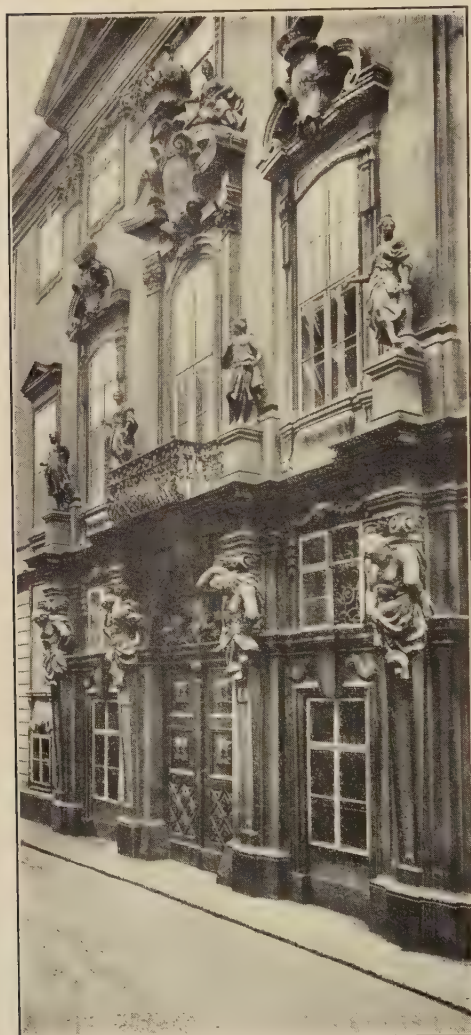


FIG. 96. DOORWAY OF THE OLD RATHAUS, VIENNA

168. Doorway of the Old Rathaus, Vienna.—Fig. 96 shows the entrance doorway of the old Rathaus in Wipplinger Strasse, Vienna. Although it has the usual Rococo characteristics the carving is exceedingly good, and being concentrated in special parts of the façade there is much more plain wall surface in this admirably designed front, which dates from 1706, than in most of the buildings of the Baroque period. In the courtyard is the well-known Perseus and Andromeda fountain by the great Viennese sculptor Donner.

169. The Karls Kirche, Vienna.—This fine Baroque church, a plan of which is shown in Fig. 97, was

erected between the years 1716 and 1736 after designs supplied by Fischer von Erlach. As will be seen on reference to Fig. 98, the structure comprises a lofty domed church with a Corinthian

portico, flanked by columnar belfries and end pavilions. The belfries, the design of which is based on Trajan's column at Rome, are about 108 feet in height and 13 feet in diameter. The spiral reliefs by Mader illustrate incidents in the life of St. Carlo Borromeo.

170. The Ruhmeshalle, Munich.—Fig. 99 illustrates the Ruhmeshalle at Munich. This structure, comprising a Greek Doric colonnade with projecting wings, was built to contain statues and busts of Bavarian notabilities. The adjoining centrally placed colossal bronze statue of Bavaria, by Schwant-haler, is 62 feet in height. The façade of the structure is of Greek origin and its details and proportions are strictly in accordance with antique precedents. The building, designed by Klenze, was completed in 1853.

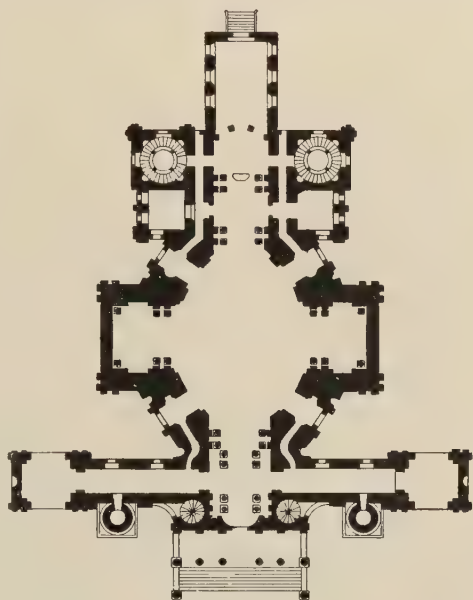


FIG. 97. PLAN OF KARLS KIRCHE, VIENNA

171. The Glyptothek, Munich.—The Glyptothek, or sculpture gallery, at Munich, Fig. 100, erected in 1816 to 1830 after the designs of Klenze, has a central portico of eight Greek Ionic columns and two long wings the architecture of which is not in harmony with that of the dominating central feature of the façade. The sculptured group in the tympanum of the pediment represents Minerva as protectress of the plastic art and the wall niches contain statues of famous sculptors.

172. City Gate, Munich.—Another example of a modern building modelled from the antique and also by Klenze is found

in the city gateway, or Propylæa, at Munich, Fig. 101, placed at the termination of the Königs-Platz. The central composition, in the Greek Doric style, is flanked by large pylons enriched with



FIG. 98. KARLS KIRCHE, VIENNA

sculptured reliefs representing scenes from the Greek war of Independence, 1827. The building was completed in 1862.

173. Parliament House, Vienna.—Fig. 102 illustrates one of the façades of the Reichsraths-Gebäude, or House of Parliament, at Vienna, built in 1875 to 1883, after the designs of Theophil von Hansen. Greek influence is shown in the treatment of the central portico of this front.

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATIONS

174. Plans.—The plans of buildings of the German Renaissance period possess few special characteristics, but oriel windows and angle turrets were freely used in the domestic buildings, the roofs of which were carried to a considerable height to receive



FIG. 99. THE RUHMESHALLE MUNICH

attic floors. Large buildings were usually grouped round internal courts.

175. Walls.—The wall spaces were generally over-ornamented with surface decorations in the early and Baroque periods, but in the Classic period a successful effort was made to reproduce the stately severity of the walling of ancient times.

176. Roofs.—On the first introduction of Renaissance architecture the high-pitched roofs of the mediaeval age were retained.

but with the full development of the revived art of the Classic

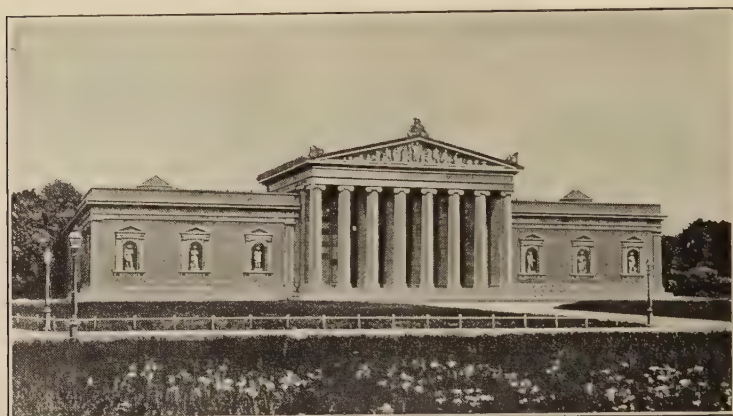


FIG. 100. THE GLYPTOTHEK, MUNICH



FIG. 101. CITY GATE, MUNICH

period, low roofs, hidden by lofty entablatures, came into general use for public buildings.

177. Columns.—When, late in the eighteenth century, classic art was fully appreciated and understood, the orders were reproduced with all their original grace and purity. In the other phases of German Renaissance the columns were enriched with fantastic ornamentation and their correct proportions disregarded.

178. Openings.—The pseudo-Gothic doorways and mullioned Gothic windows of the Early period were superseded in the classic



FIG. 102. FAÇADE OF PARLIAMENT HOUSE, VIENNA

phase by doorways and windows carefully modelled on the forms prevalent in antique art.

179. Mouldings.—Except during the Classic period, the mouldings were usually coarsely worked and badly proportioned.

180. Ornamentation.—Elaborate cartouches and strap-work ornamentation, the latter exhibiting much variety in its interlacings, are common features of German Renaissance decoration, which, in the main, is very similar to that prevalent in England during the late Tudor and Jacobean periods.

BELGIAN AND DUTCH RENAISSANCE

NOTES ON BELGIUM AND HOLLAND

HISTORICAL AND SOCIOLOGICAL

181. Historical.—Although Philip II of Spain was known as the champion of Catholicism, yet the Reformation made great progress among his subjects in the Low Countries. In his efforts to crush the new doctrines by the terrors of the Inquisition and the remorseless persecutions of the Duke of Alva, supported by a powerful army of Spanish troops, the King aroused the spirit of revolt in the northern states. Here the standard of Protestantism was raised, in 1568, by William of Nassau, Prince of Orange, and the future Dutch Republic began its long struggle for freedom which terminated with the peace of Westphalia in 1648 when the independence of the United States of Holland was formally acknowledged.

182. The southern Catholic state, namely, Belgium, remained under Spanish rule until 1713, when it was given to Austria under the terms of the Peace of Ryswick. In 1797, by the treaty of Campo Formio, Belgium became a French possession, and on the fall of Napoleon in 1815 it was united to Holland. But the spirit and religions of the people of the north and south provinces of the Netherlands were altogether at variance, and in consequence of the revolution of 1830 Belgium was declared an independent kingdom.

183. Sociological.—Her independence secured, Holland soon began to occupy an important position among the nations of Europe, by whom her alliance was eagerly sought. The war for liberty had stimulated the national energy which now showed itself in vast commercial dealings with other countries as far

distant as India, Japan, and America. By the end of the seventeenth century the Dutch possessed a merchant fleet that surpassed all the combined fleets of other countries and Amsterdam reigned supreme as the most important commercial city in the world. At this period great attention was given to the development of science and art and the immense progress made in the latter is attested by the grandeur of the seventeenth-century Dutch and Flemish schools of painting, associated as they are with the names of Rubens, Rembrandt, Teniers, Frans Hals, and other great artists.

ARCHITECTURAL EXAMPLES

ECCLESIASTICAL AND CIVIC BUILDINGS

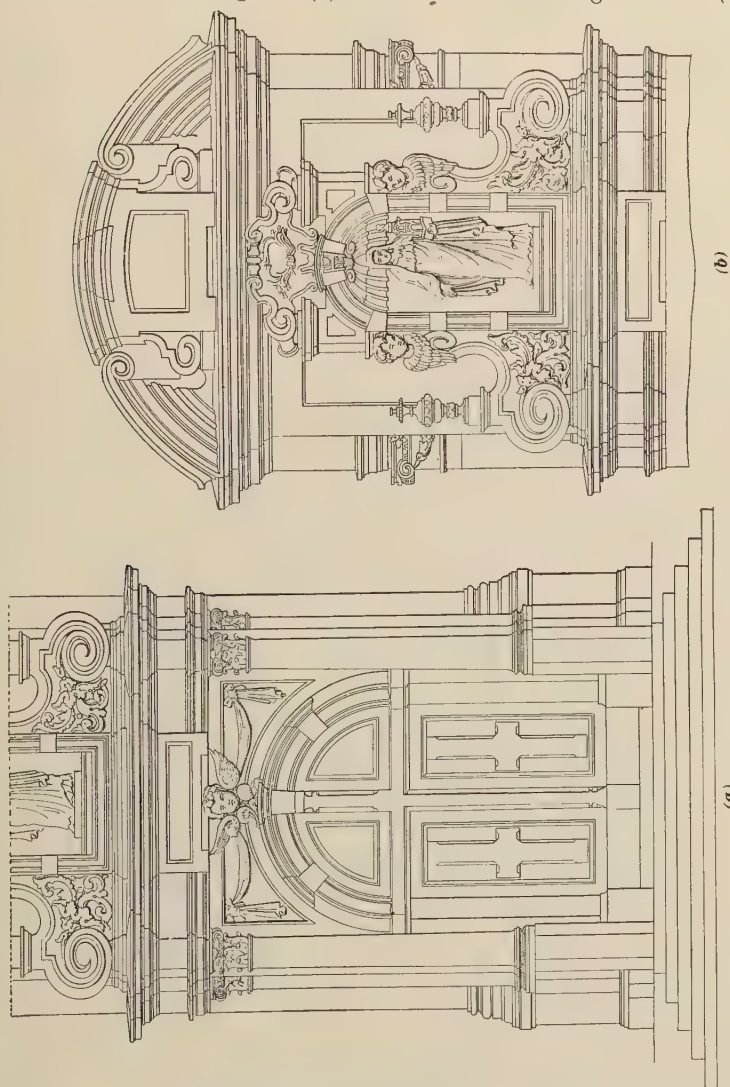
184. Distinctive Features.—The half French, half Flemish character of Belgium is reflected in its Renaissance architecture, in which, however, French influence predominates. But in Holland the plain utilitarian and simple nature of the buildings, dating from the same period of art, makes them singularly unlike the richer and more ornate Renaissance structures of the southern provinces in which the Gallic proclivities of the people are freely expressed in numerous guild houses and other civic buildings. Belgian and Dutch architecture freed from all extravagances is seen at its best in the monumental town halls of Antwerp, 1581, and Amsterdam, 1648 to 1655. As in other countries, the façades of the Jesuit churches of Belgium are usually overloaded with misplaced Rococo ornamentation.

185. Church of the Béguinage.—In common with other churches built by the Jesuits, the façade of the Church of the Béguinage at Brussels, Fig. 103, presents most of the characteristics of Baroque architecture. Thus, the composition is not cohesive, the lofty central feature having no obvious connection with the low flank walls of the front. The amount of plain wall surface is altogether insufficient to counteract the effect of the lavish Rococo ornamentation, and the fantastic outlines of the flanking gables are incongruous and unnecessary features of



FIG. 103. CHURCH OF THE BÉGUINAGE, BRUSSELS

the design. Fig. 104 (*a*) and (*b*) illustrates the central doorway of the church and Fig. 105 (*a*) the detail of the aisle gables and (*b*),



(*a*) FIG. 104. DETAILS FROM CHURCH OF BÉGUINAGE, BRUSSELS

(*c*), and (*d*) the details of the ground-floor pilasters and the lofty stone finials.

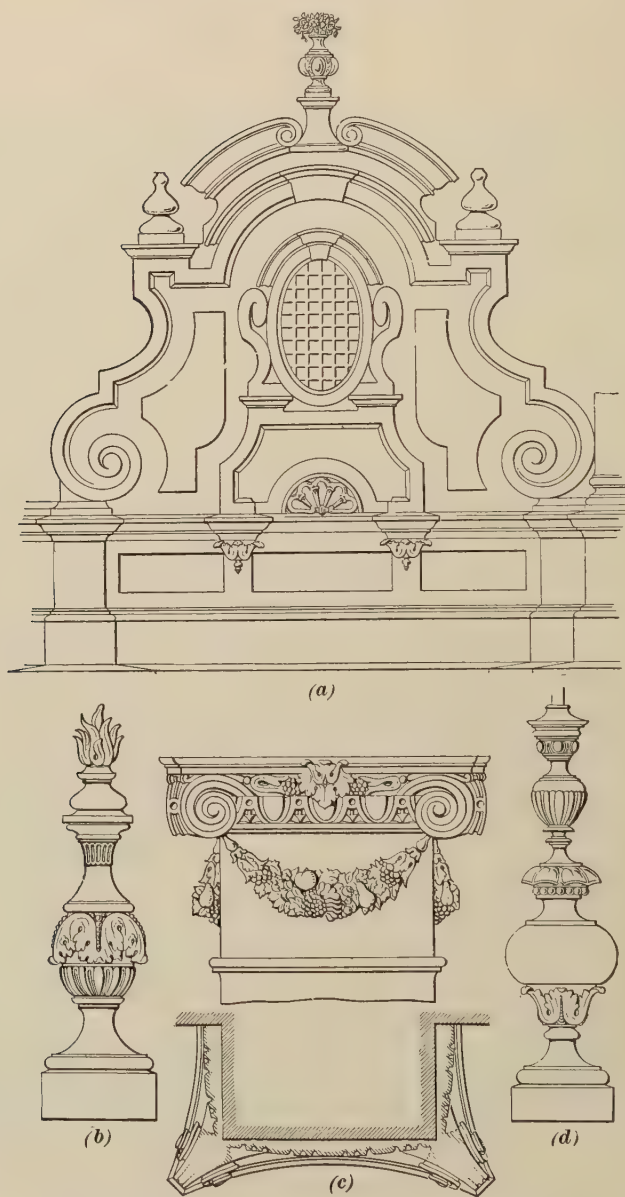


FIG. 105. DETAILS FROM CHURCH OF THE BÉGUINAGE, BRUSSELS

186. Market at Haarlem.—The market hall at Haarlem, a quaint and interesting example of Dutch architecture erected at the end of the sixteenth century, is illustrated in Fig. 106. Many characteristics of the Renaissance architecture of Holland appear in this small brick and stone façade. For instance, in the wide stepped gable in which a monotonous effect is avoided



FIG. 106. MARKET HALLE, HAARLEM

by the projecting corbels, and by the introduction of courses of different materials. Features belonging to this architecture are also found in the homely treatment of the windows with their plain brick and stone arches, and in the alternate bands of brick and stone that serve to emphasize the centrally placed arched entrance.

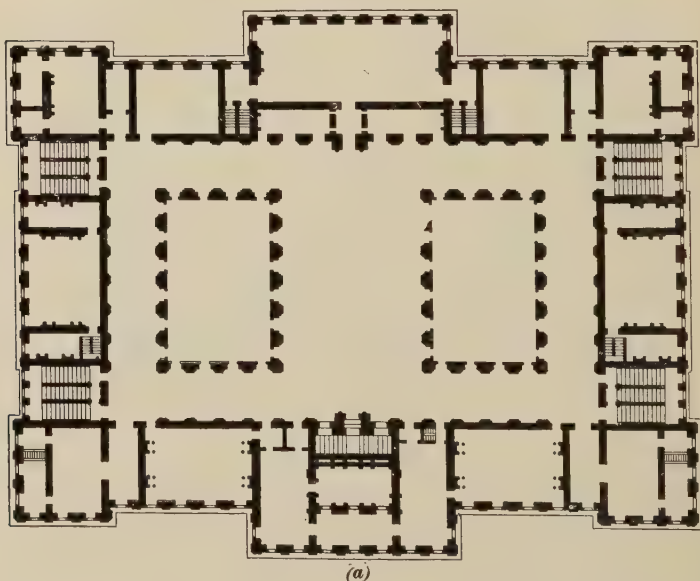
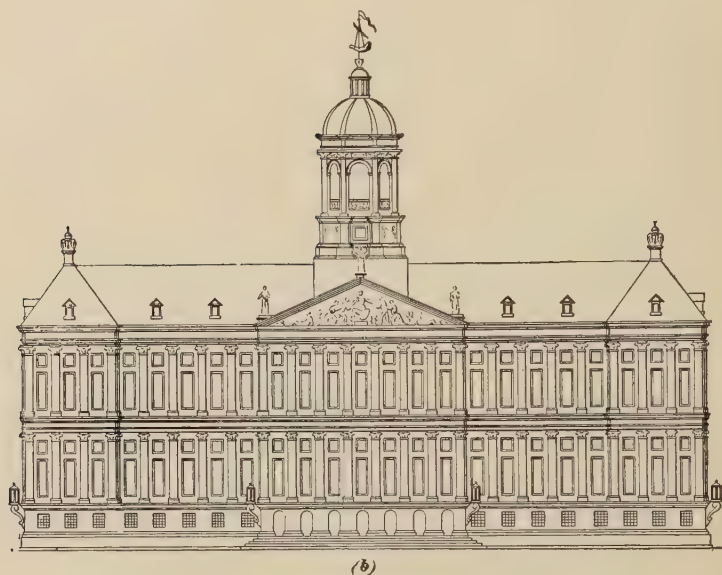


FIG. 107. PLAN AND ELEVATION OF TOWN HALL, AMSTERDAM

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

187. Plans.—The plans of Belgian and Dutch Renaissance buildings are usually rectangular in form and symmetrical in arrangement. Excellent examples of the planning of the period are found in the internal arrangement of the town halls of Antwerp and Amsterdam. The latter building, which was designed by the Dutch architect Campen, is illustrated in Fig. 107 by the plan (*a*) and the elevation (*b*).

188. Walls.—The value of plain unbroken wall surfaces was better realized by the Dutch than by the Belgian architects of the Renaissance, but gables of fantastic outline, or arranged in steps, were common to both parts of the Netherlands.

189. Roofs.—The roofs were usually of steep pitch, but occasionally, as at the town hall at Antwerp, flat roofs were used.

190. Columns.—Although the orders and pilasters were constantly applied for the decoration of the façades, they were seldom correctly proportioned and their details were rarely in accordance with the best classic examples.

191. Openings.—For secular buildings square-headed openings seem to have been preferred to the arch form. The town halls of Antwerp and Amsterdam have arcades of circular-headed openings on the ground floor, above which the windows are square headed throughout.

192. Mouldings.—The mouldings rarely possessed the true classic correctness of proportion found in the best Italian examples.

193. Ornamentation.—In Holland the uncouth Rococo ornamentation in vogue was but sparingly applied externally, but Belgian buildings were usually more ornate in character. In particular the churches were lavishly decorated externally, while internally, owing to the richness of their ornamentation, and to their immense size, the rood screens, altar-pieces, and pulpits were conspicuous features.

SPANISH RENAISSANCE

NOTES ON SPAIN

HISTORICAL AND SOCIOLOGICAL

194. Historical.—When, in 1516, Charles I succeeded to the throne of Spain he became ruler of the most important, wealthy, and influential kingdom in Europe. But, late in the sixteenth century, decay set in and in the course of a hundred years, from 1598 to 1700, Spain had not only lost her predominating position in international affairs and many important provinces, but the population of the country had been seriously decreased by the expulsion of 500,000 of her Moorish subjects. In addition, Spanish prestige had been lowered by the defeat of the great Armada and the revolt and final success of the United Provinces of the Netherlands.

195. Sociological.—Never before had political and religious despotism experienced a downfall so sudden and so complete. For at the commencement of the eighteenth century Spain no longer possessed either industry, commerce, or adequate naval and military means of defence. Her agriculture was so completely ruined that entire districts of the country had become desolate. In the rapid decay that set in during the seventeenth century Spain scarcely retained any portion of her literary glory of the preceding century. While literature became decadent the religious intolerance of the country, supported by the ever-increasing tyranny of the Inquisition, stifled free thought and free speech and retarded the general advancement of civilization. But the national art was rendered glorious by the genius of Velasquez, 1599 to 1660, and his follower Murillo, 1618 to 1682, the two greatest painters of the Spanish School.

ARCHITECTURAL EXAMPLES

SECULAR BUILDING

196. Principal Art Periods.—The prosperity of Spain in the first half of the sixteenth century was expressed in the ostentation displayed in the buildings of the period, which were characterized by the phase of Spanish Renaissance art, known as the *Plateresco*, or silversmith's style, and distinguished for its minute and profuse decoration. This first, or *Early period*, of the classic revival, extending from the fall of Granada, in 1492, to the abdication of Charles V, in 1555, was followed by the second, or *Classic period*, due to the influence of the architect Herrera, that lasted until the middle of the seventeenth century. The third phase of Spanish Renaissance, the *Decadent*, or *Churrigueresque period*, so called from the name of the popular architect of the time, seems to have been evolved by the fusion of the architectural impurities of the decadent periods of the Renaissance of other countries. It flourished in Spain from about the middle of the seventeenth century to the middle of the eighteenth century.

197. Hôtel de Ville, Seville.—The elaborately decorated façades of buildings belonging to the *Plateresque*, or Early Renaissance, period in Spain are well exemplified in the Hôtel de Ville, at Seville, Fig. 108. This building was commenced in 1559; its walls are enriched with carved pilasters of unequal width, baluster-like columns, delicately ornamented friezes, medallions, and panelled plinths. The minuteness and delicacy of this ornamentation had a certain similarity with that found in the work of the silversmith, or *platero*, hence the term *plateresque*.

198. Escorial Palace.—The Escorial at Madrid, one of the most extensive palaces in Europe, includes, as seen from the plan, Fig. 109, in addition to a royal residence, large collegiate and monastic buildings and a fine church. Commenced in 1563, after the designs of Juan Battista, who died in 1567, the works were proceeded with during the following twelve years under the direction of his pupil, Juan de Herrera. The plan of the



FIG. 108. HÔTEL DE VILLE, SEVILLE

huge building covers a vast rectangular space, some 700 or 800 feet in length and nearly 600 feet in breadth. Built of granite during a comparatively severe and correct phase of classic art, the large church with its lofty central dome and two western towers is the dominating feature of the design.

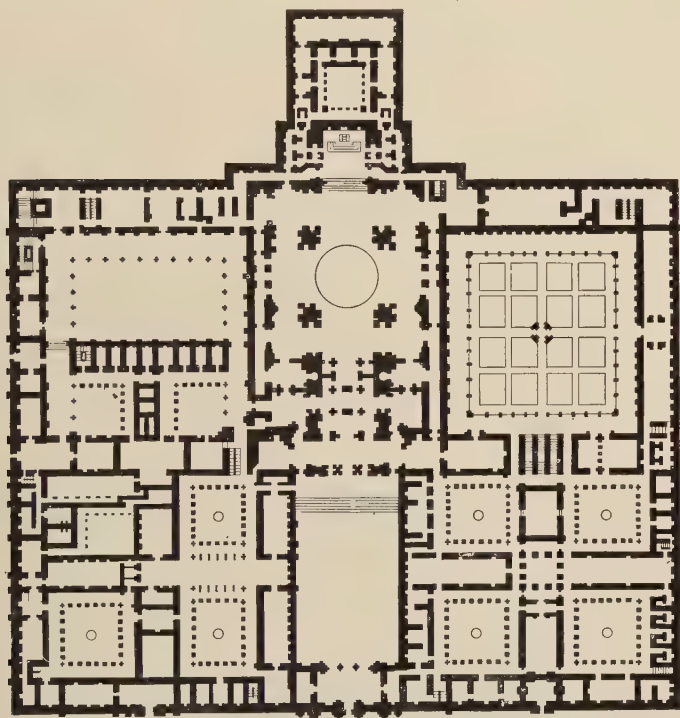


FIG. 109. PLAN OF ESCORIAL PALACE, MADRID

199. The Alcazar, Toledo.—The Alcazar of Toledo was commenced in 1568, but was not completed until many years later, in the reign of Philip II. Designed by Herrera, its central internal courtyard is embellished with a two-storied arcade composed of semicircular arches supported by columns without entablatures. The lofty flat façade with its central entrance and projecting wings is crowned by a classic entablature and balustrade.

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

200. Plans.—The plans of the important buildings, such as those of the Escorial and the palace of Charles V in the Alhambra, are symmetrical in form and well arranged.

201. Walls.—Surface decoration was liberally applied to the wall spaces in the buildings of the First and Third periods. In the Middle period the lower part of the walling was sometimes rusticated in the Italian manner.

202. Roofs.—Often concealed behind lofty entablatures, the roofs, generally of low pitch, were frequently brought well over the walls of the façades in the form of richly decorated boldly projecting eaves.

203. Columns.—Elaborately decorated columns, resembling balusters, were used in the Early period of the Spanish Renaissance, but later, under the influence of Herrera, the classic orders became popular.

204. Openings.—The openings for the doors and windows were usually either square headed or semicircular in form. Ornamental brackets, in combination with foliated capitals, were freely used for the decoration of the arcading in internal courtyards.

205. Mouldings.—Although based upon classic models, the mouldings of the first and third periods of the Renaissance in Spain were not proportioned in accordance with the Italian manner. But those of the Middle, or Classic, period were carefully detailed from ancient examples.

206. Ornamentation.—In the Plateresque period carved and other decoration of a very minute and delicate nature was applied for the adornment of all parts of the buildings of the period. The Second, or Classic, period was distinguished by the usual ornamentation shown in the works of Palladio, and other Italian architects of his time, and that of the Third period by the indiscriminate use of debased architectural forms and Rococo ornament.

ENGLISH RENAISSANCE

NOTES ON ENGLAND

HISTORICAL

207. House of Tudor.—Although the Tudor rule of the sixteenth century was of a despotic nature it was also one that was content to suspend, and did not seek to destroy, public liberties. It directed the course of the Reformation in this country with great diplomatic skill by using, but not outwardly opposing, the authority of a docile parliament. Thus the inevitable struggle between the king and the people did not set in until during the succeeding century under the reigns of the Stuart kings.

208. Oliver Cromwell.—Menaced in their liberty, the English people rebelled against their sovereign Charles I, 1625 to 1649, and, led by the great military genius, Oliver Cromwell, finally triumphed over the king, whose execution caused profound dismay among the ruling houses of Europe. Cromwell, who succeeded Charles, was content to reign under the title of Protector. Too republican to found a dynasty, his death was soon followed by the restoration of the monarchy in 1660.

209. The Habeas Corpus.—When reinstated in their kingdom, the Stuarts revived the faults and misgovernments of their father and grandfather. The frivolous Charles II brought discredit upon the country by the corruption of his court, and his misrule alienated the loyalty of many persons who had been most active in obtaining his recall. Another revolution seemed imminent, but the King yielded and signed the Habeas Corpus Act in 1679, which, subsequently, proved so valuable a guarantee of the liberty of the subject. The next Stuart king, James II, endeavoured

to re-convert England to Catholicism and, in consequence, was deposed in 1688.

210. Signing of Declaration of Rights.—Parliament compelled the new king, William of Orange, to sign the Declaration of Rights, 1689, by which the royal prerogative was greatly diminished. After the death of Queen Anne the throne passed to Prince George of Hanover, 1714 to 1727, whose descendants still wear the crown.

SOCIOLOGICAL

211. Conditions in the Sixteenth Century.—Under the rule of Henry VII, the first Tudor king, commerce, trade, and industry made rapid strides and the people enjoyed greater liberty than before, although the establishment of the court of the Star Chamber led, in later times, to tyranny and oppression. In the reign of Henry VIII, during which many persons were executed on account of their religious opinions, an investigation took place with regard to the abuses that had arisen in the monasteries. The result of the inquiry led to the destruction of some hundreds of these religious buildings and the confiscation of their estates to the Crown. Protestantism found a firm supporter in the next king, Edward VI, but in the reign of his successor, Mary, the persecutions and executions that marked her father's reign commenced anew. Married to Philip II of Spain, this queen was one of the most prominent and bigoted advocates of Roman Catholicism.

212. Reign of Queen Elizabeth.—Elizabeth, 1558 to 1603, placed herself at the head of the reformed religion and re-established the Protestant service of King Edward's time, to which she forced the people to conform. The reign of Elizabeth, one of the most stirring and picturesque in history, was notable for the great revival of poetry and literature, as evidenced by the works of the brilliant Elizabethan writers, Shakespeare, Marlowe, Sidney, and Spencer. During this reign, notable for the commencement of England's naval supremacy, commerce and maritime adventure were encouraged, and under the leadership of such men as Drake, Hawkins, Frobisher, and Raleigh, English

sailors and explorers traversed every sea in quest of Spanish galleons laden with the gold and silver of the new world.

213. From Cromwell's Time to the Present.—During the protectorate of Cromwell, England, honoured and feared abroad, exercised great influence in European politics. Through the efforts of the Lord Protector the Protestant states of Europe became united, liberty was secured for the French Protestants, and Spain compelled to allow free trade with the West Indies. With the accession of William and Mary, 1689, the contest between King and parliament that had been renewed by Charles II and James II was ended by the almost full development of the present system of government under which the English people have long been contented and prosperous.

ARCHITECTURAL PERIODS

EARLY RENAISSANCE

214. Italian Influences.—The transition, from Gothic to Renaissance architecture, appears to have been brought about through the influence of the Italian artists and craftsmen invited to England, by Henry VIII or Cardinal Wolsey, to execute the carving and other decorative features of extensive buildings, such as Hampton Court, the palaces of Nonesuch, St. James, and Whitehall, then in course of erection. Thus traces of Italian art exist in fragmentary form in English buildings of a distinctly Gothic character as, for instance, in the gate-house and clock tower of Hampton Court, where terra-cotta busts of Roman emperors and a Renaissance plaque adorned with the arms of Cardinal Wolsey are still to be seen. Other examples of Renaissance art in England are found in the monuments and tombs of the time, notably in that of Henry VII at Westminster.

215. Germanic Influences.—The pioneers of Renaissance art in England seem to have left the country soon after the death of Henry VIII. At any rate, in the time of Elizabeth their places were taken by craftsmen from Germany and Flanders, for

in that reign, when national tradition in architecture succumbed to foreign influence, the result appeared in coarse Renaissance details and non-structural decoration of a Germanic type.

216. First Efforts in the New Art.—It was not until the middle of the sixteenth century that Renaissance architecture began to be firmly established in England. At that period church building was comparatively rare and the new art was chiefly employed in the construction of royal palaces and in mansions for the nobility. But a hundred years later the rebuilding of London after the Great Fire led to the erection of numerous city churches the architecture of which was of an epoch-making nature.

217. The Plans of Houses.—House planning made considerable progress during the sixteenth century. At the commencement of that period the rooms of most of the large dwellings were arranged round one or more internal courtyards approached by a gateway entrance centrally placed in the main façade. But later the quadrangular plan, enclosed on all sides, was discarded in favour of one in which the house was planned on three sides of an entrance court. Under this arrangement the principal entrance usually became a projecting bay in the centre of the main façade and, in combination with two well-emphasized wings, formed the popular **E**-shaped plan. A further development resulted in the extension of additional lateral wings from the back or garden elevation which gave an **H**-shape to the building.

218. House Decoration.—As a result of the importation of Germanic and Flemish workmen, Elizabethan and early Jacobean mansions, although often picturesque in form, were far too profusely adorned with badly designed and ill-arranged ornamentation of classic origin. Grotesque caricatures of the ancient orders were used indiscriminately for the embellishment of walls, chimneys, doors, fireplaces, and windows. Wide wooden staircases with elaborately carved balustrades terminating in huge square newels led to the upper floors. Important rooms were finished with wood-panelled wall linings and large mullioned and transomed windows ; gilded ceilings and elaborately carved oak

or marble chimney-pieces of immense size were common features. The component parts of the elevation of the building usually consisted of lofty gables of fantastic outline and numerous turrets and oriel windows. Wide flights of steps connected the stately terrace that surrounded the house with a formal garden.

219. Style of Public Buildings and Mansions.—These characteristics of the classic revival in England appeared, in more or less pronounced form, in most of the public and palatial buildings erected during the reigns of Elizabeth and James I, as, for example, in the Royal Exchange, London, and the mansions of Burghley, Longleat, Audley End, Wollaton, and Hatfield. Although these early Renaissance buildings are of varying degrees of merit, yet the best undoubtedly fall short of the standard attained by French architects on the introduction of classic architecture into France. But it is satisfactory to know that it was owing to the genius of an Englishman, Inigo Jones, that the classic revival ultimately reached this country in its purest and most uncompromising form.

CLASSIC RENAISSANCE AND ITS FOUNDERS

220. Inigo Jones.—Born in London in 1572, Inigo Jones first visited Italy toward the end of the sixteenth century. In 1605 and subsequent years he was engaged to design the scenery for various masques, written by Ben Jonson, and given by King James or his courtiers. Appointed, in 1610, surveyor of the works to Prince Henry, Inigo Jones, after the untimely death of that prince, returned to Italy to study the works of Palladio and other great Italian masters, and on his return to England, in 1615, he received the crown appointment of surveyor of the works. At this period of his career the great architect was busy with the erection of Castle Ashby and Houghton Hall, Bedfordshire. He also prepared designs for a new Star Chamber and for the Queen's House at Greenwich, rebuilt the chapel of Lincoln's Inn, and designed some houses on the west side of the square.

221. Commissioned, in 1619, to erect the new palace of Whitehall, Inigo Jones produced a magnificent scheme comprising a huge rectangular block of buildings with large internal

courtyards enclosed by symmetrically designed elevations. The thorough grasp of the essentials of classic art displayed by Inigo Jones in this design placed his wonderful project far in advance of any proposal of a like nature hitherto brought forward in this country, and revealed its author as the greatest architectural genius of the day. Proportioned in accordance with the rules laid down by the Italian masters, and symmetrical, regular, and harmonious in form, the designs for the façades of the new palace enabled many contemporary architects to realize for the first time the full extent and meaning of the classic revival. Henceforth the success of the Renaissance movement in England was assured.

222. Among other works of Inigo Jones the following may be mentioned: Raynham Park, Norfolk; Wilton House, Wiltshire; St. Paul's Church, Covent Garden; and the Water Gate of York House, London. Various buildings left unfinished at his death, in 1652, were completed by his able pupil and successor, John Well.

223. Christopher Wren.—The next great master of the Renaissance in England, Christopher Wren, 1632 to 1723, was one of the most learned men of his time. After a brilliant career at Oxford, Wren became, in 1661, Savilian professor of Astronomy at that University. Taking up the study of architecture comparatively late in life, Wren's lack of training militated against the success of his earlier works which, naturally enough, fell far short of the standard of excellence set up by his great predecessor Inigo Jones. Wren's first tentative efforts in the great art of which he was destined, after frequent experiments, to become a supreme master, are to be seen in the chapel of Pembroke College, Cambridge, and in the Sheldonian Theatre, Oxford, both of which were designed in 1663 to 1664. His rapidly increasing knowledge of architecture is shown in the Ashmolean building at Oxford and this despite the fact that the pernicious influence of Jacobean work is observable in the mullioned windows of that building.

224. Wren's great opportunity of exhibiting his now fully matured powers of design came with the Great Fire of London, 1666. As the city had been left in a ruined condition by the

ravages of the fire, Wren prepared a finely conceived design for its rearrangement under a scheme of general rebuilding. Although favourably received, and finally accepted, by the King, Wren's plan for a new London was never destined to be carried out. However, the work of rebuilding St. Paul's Cathedral and the city churches on the lines proposed in that scheme was proceeded with. In the latter buildings the architect's wonderful versatility is shown in the ingenuity with which difficulties, connected with the irregularities of outline and cramped positions of some of the sites, have been successfully met and overcome, and in the charming variety displayed in the designs of the towers and steeples.

225. The genius of Wren is fully displayed in his great work, the magnificent cathedral of St. Paul, but his buildings at Hampton Court, Trinity College, Cambridge, and Greenwich Hospital are all good examples of his exceptionally great artistic and constructional gifts. In addition, Wren's domestic work, always interesting, often possesses a quiet homely charm that is as attractive as it is rare. Possibly the so-called Queen Anne style was evolved from Wren's successful efforts in unpretentious design. For, when not overladen with debased classic forms and details, the fundamentally homely character of this phase of the Renaissance is suggestive of Wren's houses, with their plain red-brick walls crowned with boldly projecting cornices and surmounted by high-pitched roofs and their characteristic doorways modelled on simple classic forms.

226. Wren's Successors.—Of Wren's successors his pupil Nicholas Hawksmoor, 1661 to 1736, designed the London churches of St. Anne, Limehouse; St. George-in-the-East; St. Mary Woolnoth, Lombard Street; St. George, Bloomsbury; and Christ Church, Spitalfields, in addition to rebuilding the quadrangles of Queen's and All Souls' Colleges, Oxford. Sir John Vanbrugh, 1666 to 1726, built Castle Howard, Yorkshire, and Blenheim Palace, the latter for the great Duke of Marlborough. James Gibbs, 1682 to 1754, erected the metropolitan churches of St. Mary-le-Strand, St. Martin-in-the-Fields, and St. Peter, Vere Street, and added the spire of St. Clement Danes. The Radcliffe

Library at Oxford and the Senate House at Cambridge were also designed by this architect. Thomas Archer, a pupil of Vanbrugh, built the church of St. Philip at Birmingham and that of St. Paul at Deptford, and William Kent, 1684 to 1748, who was long associated in architectural work with the Earl of Burlington, designed Holkham Hall, Norfolk; the Treasury Buildings, Whitehall; Devonshire House, Piccadilly; and, in conjunction with J. Vardy, the Horse Guards at Whitehall.

227. The Earl of Burlington, 1695 to 1753, a distinguished amateur, is said to have designed several well-known buildings of his time. But associated as he was with various prominent architects, it is doubtful whether the designs attributed to him were really his own personal creations. Colin Campbell designed Houghton Hall, Norfolk, and Mereworth, Kent, and John James the church of St. George, Hanover Square. Thomas Ripley, who was associated with Campbell in the erection of Houghton Hall, erected the Admiralty, Whitehall, and Henry Flitcroft, 1697 to 1769, was the architect of the churches of St. Giles-in-the-Fields, St. Olave, Southwark, and St. John, Hampstead. George Dance, the elder, 1695 to 1768, designed the churches of St. Luke, Old Street, St. Leonard, Shoreditch, and St. Botolph, Aldgate, in addition to the Mansion House and Guy's Hospital. His son, George Dance the younger, 1741 to 1825, was the architect of Newgate Prison, St. Luke's Hospital, and the churches of All Hallows and St. Alphage, London Wall. John Wood, of Bath, 1704 to 1754, designed Prior Park, Widcombe, and the Old Town Hall now the Exchange, Liverpool.

REVIVAL OF GREEK STYLE

228. William Chambers and the Adam Brothers. — The influence of Wren began to disappear toward the second half of the eighteenth century, and the signs of a coming change in the architecture of the country were intensified by the publication, in 1762, of Stuart and Revett's book on the antiquities of Athens. The influence of this valuable work led to the enthusiastic study of Greek architecture. Although the old English

tradition was loyally followed by Sir William Chambers, 1726 to 1796, in the erection of Somerset House, London, the greatest architectural work of the reign of George III, yet the divergence from Palladian models by the equally successful contemporary architects, the brothers Robert and James Adam and other leading men, resulted in the introduction of a style essentially Greek in origin.

229. The Bank of England, by Sir John Soane, 1750 to 1837, shows marked individuality and considerable divergence from the traditional style introduced by Inigo Jones and continued by Wren. But the direct influence of Athenian art is seen in the church of St. Pancras, built, early in the nineteenth century, in the Grecian Ionic style. University College, Gower Street, and the National Gallery in Trafalgar Square, both designed by Wilkins, the British Museum, by Sir Robert Smirke, and St. George's Hall, Liverpool, by Elmes, all show the influence of Greek art in a greater or less degree.

ARCHITECTURAL EXAMPLES

EARLY RENAISSANCE BUILDINGS

230. Bramshill House, Hampshire.—The main entrance of Bramshill House, Hampshire, contains some of the worst characteristics of the Early Renaissance period. It was erected between the years 1605 and 1612 and the greater part of the façade is of plain and unobjectionable character, as fortunately the ornamentation has been restricted to two or three features, of which the central entrance, Fig. 110, is the most remarkable. Raised, as was the custom in buildings of its type and period, to the full height of the main structure, the poverty of the design is shown in the repetition at each of the three stories of a series of ugly and clumsily designed tapering pilasters of the worst Germanic type. The small, weak-looking entablature is surmounted by a huge carved excrescence bearing some semblance in form to the badge of the Prince of Wales, and one of the first laws of

construction, that of demanding opening over opening, and wall space over wall space, is violated by the superposition of a massive pier above the centre of the Oriel window.

231. Kirby Hall, Northamptonshire.—The south-west angle of this fine Jacobean mansion, situated in Northamptonshire, is illustrated in Fig. 111. With the exception of the cornice

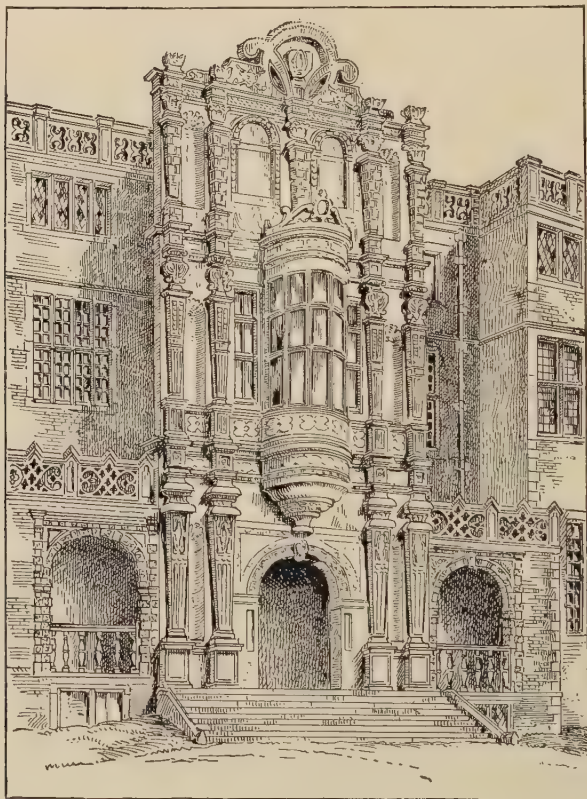


FIG. 110. BRAMSHILL HOUSE, HAMPSHIRE

moulding, with which each story of the curved bays is terminated, there are no classical elements in the composition, while the curved outlines of the crowning gables appear to be of German origin. Kirby Hall, erected between the years 1572 and 1575, was partially remodelled by Inigo Jones in 1638 to 1640.

232. Wollaton Hall, Nottingham.—Built in 1580 for Sir Francis Willoughby and designed, in all probability, by Robert Smithson, Wollaton Hall is architecturally one of the worst examples of the Elizabethan mansions of its period. The four façades of this symmetrically arranged building terminate at the

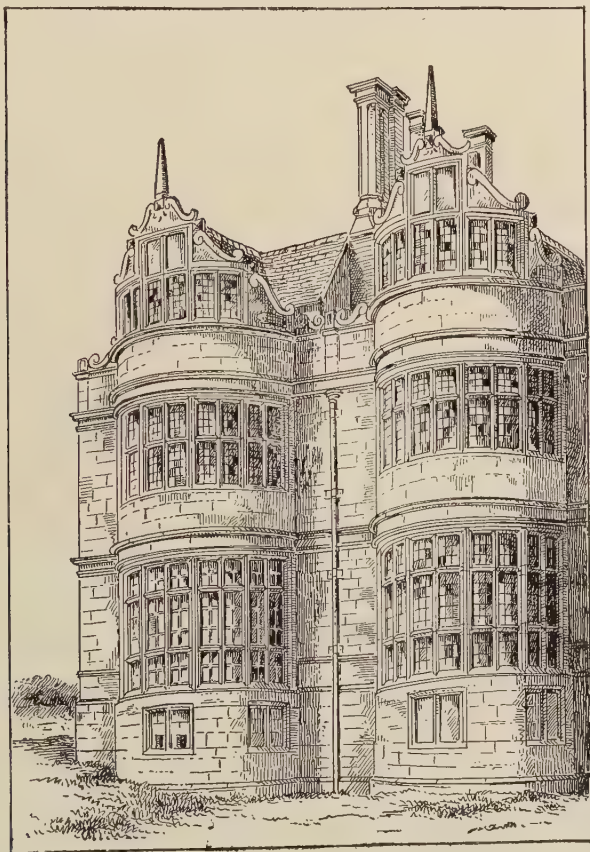


FIG. 111. KIRBY HALL, NORTHAMPTONSHIRE

angles in large square boldly projecting pavilions, Fig. 112, that rise well above the level of the main entablature. But while the details of the fronts, consisting of repetitions of debased orders and a profusion of German Renaissance ornamentation, are neither better nor worse than those of contemporary palatial

buildings, yet the general aspect of the structure is utterly ruined by the clumsy design of the great hall, that, as seen in Fig. 112, rises from the centre of the building, and, towering above its surroundings, dominates the whole.

233. Tower of the Schools, Oxford.—This well-known tower, Fig. 113, the design of which has been attributed to a carpenter

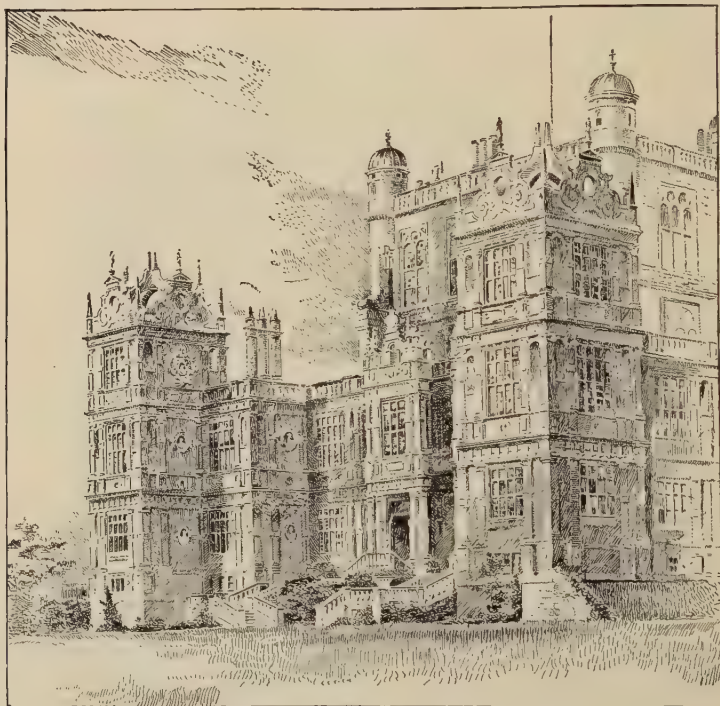


FIG. 112. WOLLATON HALL, NOTTINGHAM

named Thomas Holt, forms part of the work carried out, at Oxford, about the beginning of the seventeenth century, by Sir Thomas Bodley. The application of the five classic orders coupled and ranged in stages, one above the other, for the adornment of a structure otherwise essentially Gothic in form and treatment, has produced a result that, although sufficiently picturesque, is more curious than beautiful.



FIG. 113. TOWER OF THE SCHOOLS, OXFORD

234. Gate of Honour, Caius College, Cambridge.—This sixteenth-century gateway, Fig. 114, so named because it led from the college to the schools in which University degrees were conferred, was built, in 1559, by Dr. Caius, who received the mastership of his college, of which he was a generous benefactor and co-founder. In spite of

the incongruous nature of its details, for instance, the central arch is slightly pointed in form, this gateway is a cleverly designed example of early Renaissance architecture



FIG. 114. GATE OF HONOUR, CAIUS COLLEGE, CAMBRIDGE

CLASSIC RENAISSANCE BUILDINGS

235. The Banqueting Hall, Whitehall.—Commenced in 1619 after the design of Inigo Jones, the Banqueting Hall was the only part of the architect's scheme for an immense palace at Whitehall that was carried out. Its façade, Fig. 115, rec-

tangular in outline and consisting of two stories and a rusticated basement, is adorned with engaged central columns and side pilasters of the Ionic and Corinthian orders. The flat-headed windows are pedimented on the ground floor and on the floor above finished with plain bracketed cornices. The architrave of the main entablature is enriched with carved grotesques and festoons. Refined in its details and reticent in its ornamentation, this beautiful building is a striking example of the genius of the great artist by whom it was designed.

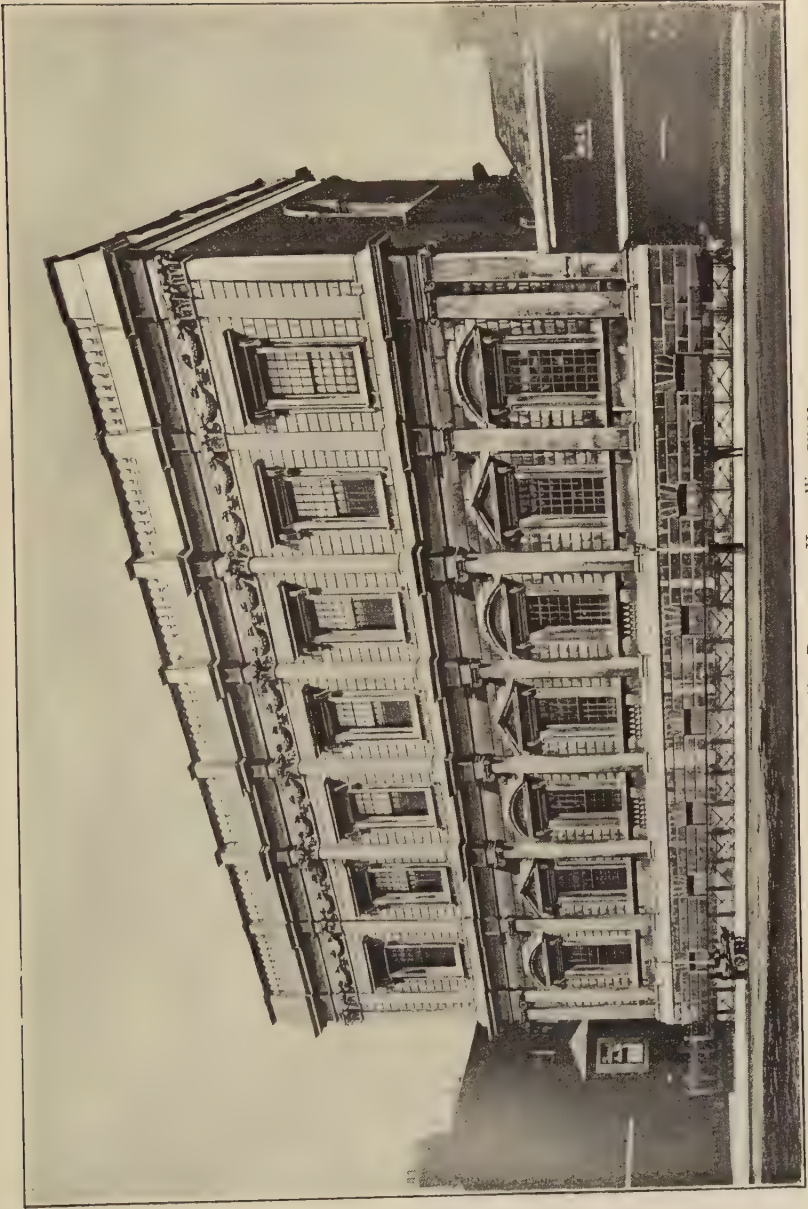


FIG. 115. THE BANQUETING HALL, WHITEHALL

236. **Water Gate, York House.**—This fine gateway, Fig. 116, designed by Inigo Jones in 1626, is still to be seen at the southern

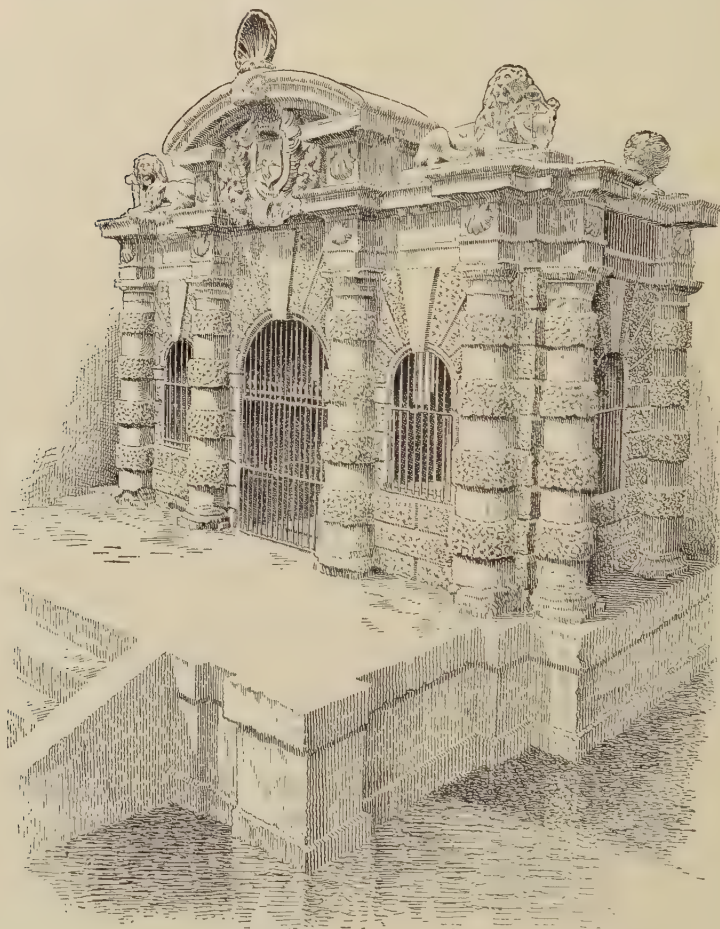


FIG. 116. WATER GATE, YORK HOUSE

end of Buckingham Street, Strand, but its original proportions are now partially concealed by the alterations made in the level of the ground on which it stands.

237. **Lindsay House.**—This old stone-fronted town house in Lincoln's Inn Fields was erected after the designs of Inigo Jones

in 1640. Its façade, Fig. 117, comprises a basement supporting six large Ionic pilasters extending through two stories and surmounted by a finely designed entablature and balustrade.



FIG. 117. LINDSAY HOUSE, LINCOLN'S INN FIELDS

238. Design for the Palace of Whitehall.—Fig. 118 illustrates the plan of the magnificent scheme prepared by Inigo Jones for the projected palace at Whitehall. The buildings are arranged round seven large courtyards, two of which, including the circular

court, are arcaded. The extensive façades are broken by square pavilions placed at the angles and in the intervening spaces of the longer fronts. In addition, each of the four external fronts has a well-emphasized central feature. The greater part of this

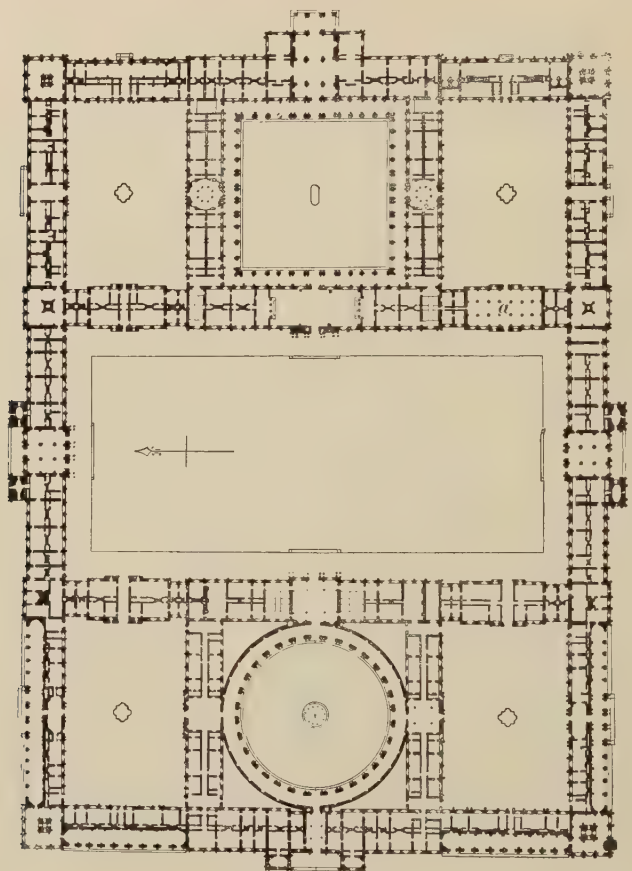
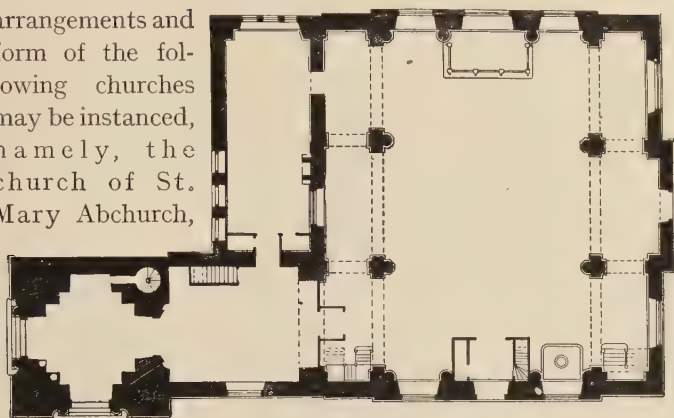


FIG. 118. PROPOSED PLAN OF WHITEHALL PALACE

immense group of buildings was to have consisted of three-storied structures rising to a total height of about 100 feet, the remainder being buildings of two stories.

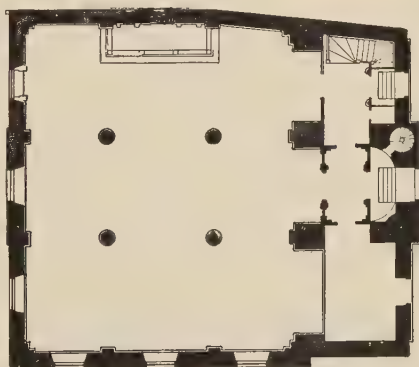
239. Wren's City Churches.—Wren's city churches exhibit their author's great versatility both in planning and designing. As examples of fertility of resource in planning the structural

arrangements and form of the following churches may be instanced, namely, the church of St. Mary Abchurch,

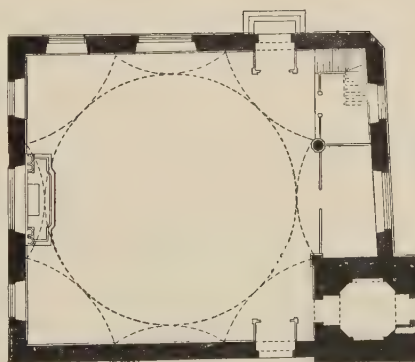


(c)
ST. MARY-LE-BOW

Fig. 119 (a), the square central area of which is covered by a flat dome. St. Martin, Ludgate Hill, Fig. 119 (b), planned in the form of a Greek cross, and St. Mary-le-Bow, Cheapside, Fig. 119 (c), divided internally into nave and aisles. As will be seen on reference to the elevations of these churches, shown in Fig. 120 (a), (b), and (c), the towers and spires are altogether dissimilar in character one to the other and each possesses features of individual interest

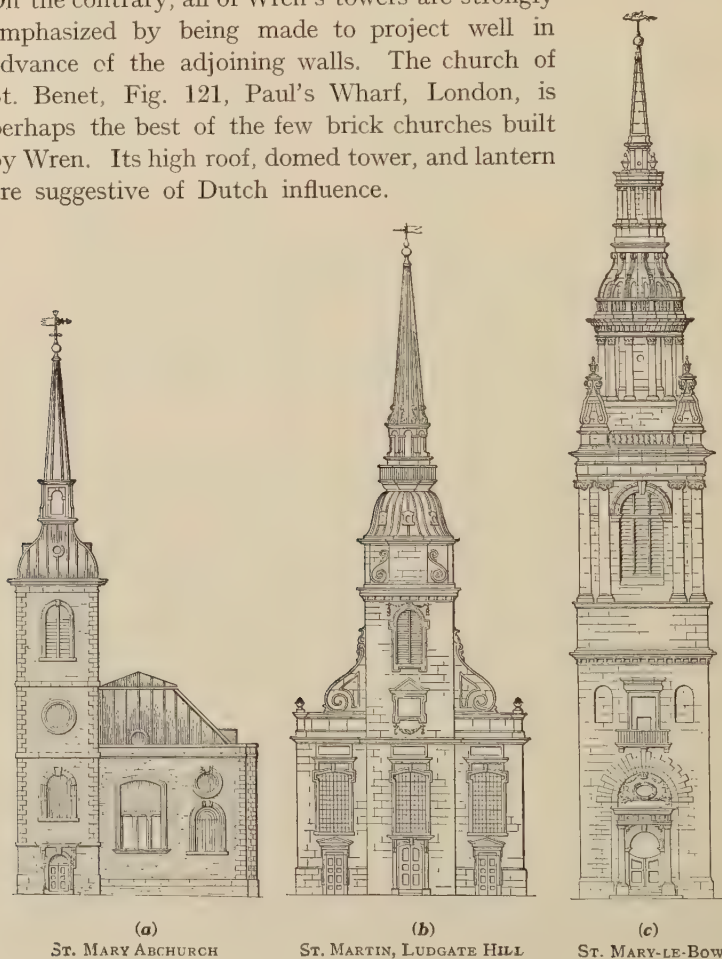


(b)
ST. MARTIN, LUDGATE HILL
FIG. 119. PLANS OF WREN CHURCHES



(a)
ST. MARY ABCHURCH

and charm. But all have one common characteristic, due to the fact that in every case the vertical lines of the tower are neither merged in the general walling nor hidden by salient features. On the contrary, all of Wren's towers are strongly emphasized by being made to project well in advance of the adjoining walls. The church of St. Benet, Fig. 121, Paul's Wharf, London, is perhaps the best of the few brick churches built by Wren. Its high roof, domed tower, and lantern are suggestive of Dutch influence.



ST. MARY ABCHURCH

ST. MARTIN, LUDGATE HILL

ST. MARY-LE-BOW

FIG. 120. WREN CHURCHES

240. Chelsea Hospital.—The Chelsea Hospital for old and invalid soldiers was commenced in the reign of Charles II, after the design of Wren, but was not completed until the reign of

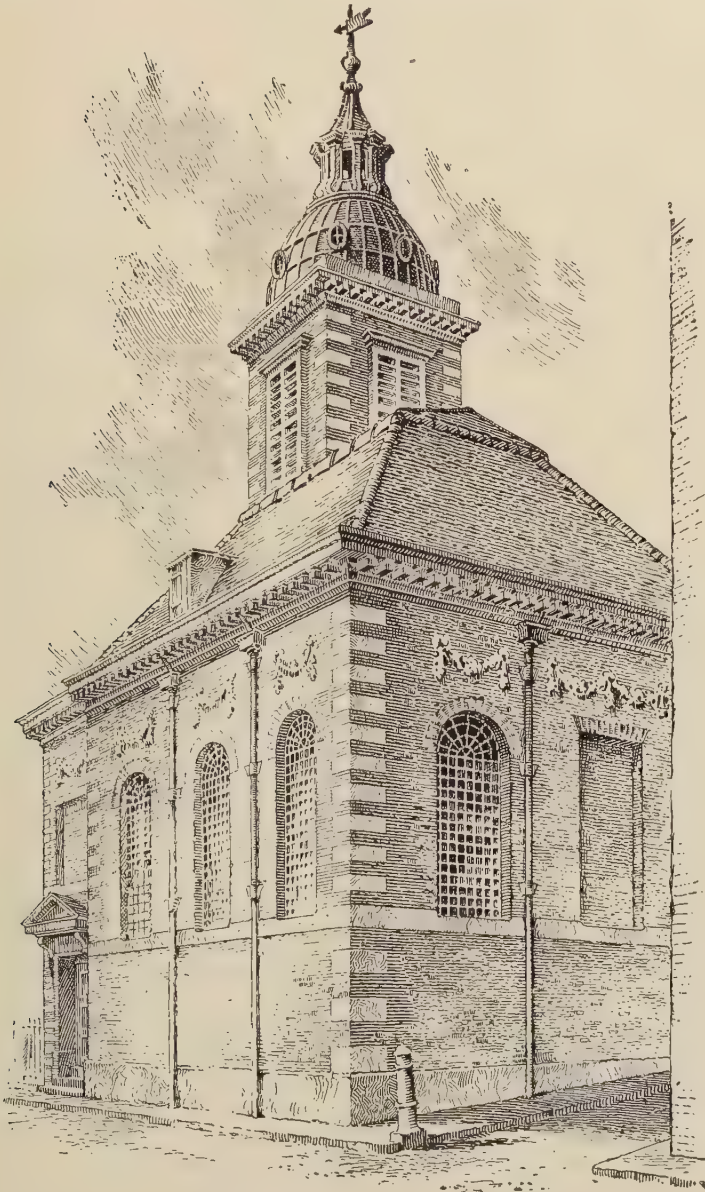


FIG. 121. CHURCH OF ST. BENET, LONDON

William and Mary. The hospital, a simple brick structure, consists of a central façade and two wings. Although plain and homely in character, its architecture is extremely attractive and



FIG. 122. CENTRAL PORTICO OF CHELSEA HOSPITAL, LONDON

expressive of the purpose for which the building was erected. The central portico of the hospital is shown in Fig. 122.

241. St. Paul's Cathedral.—When, after the Great Fire, it was found impossible to restore the vast fabric of St. Paul's Cathedral, Wren was instructed to prepare designs for an entirely new structure. Little progress, however, was made with the scheme until the year 1673, when a model, still in existence, was prepared of the architect's favourite plan, that of a Greek cross of which the external angles were shaped to a segmental form, as shown in Fig. 123. Above the crossing there was to be a large dome

constructed with outer and inner shells and carried on a circular drum supported by eight massive piers, as shown in the section, Fig. 124. The west façade was intended to comprise a portico entrance, flanked by two towers, and connected with the body of the church by a spacious circular hall or vestibule. The reasons alleged for the rejection of this design by the cathedral authorities and of the circumstances that brought about the final adoption of the present

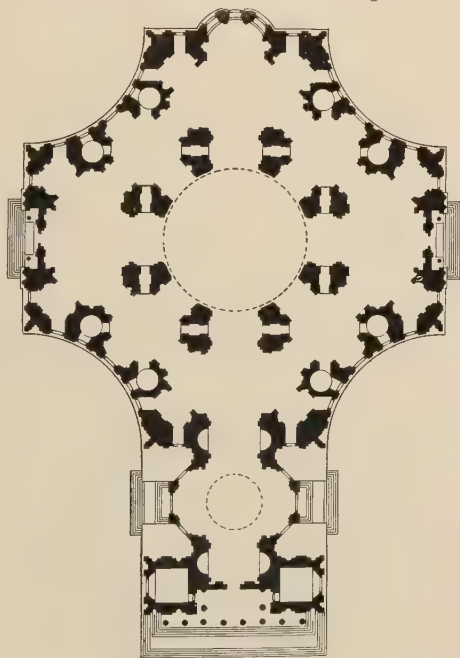


FIG. 123

WREN'S ORIGINAL PLAN OF ST. PAUL'S CATHEDRAL

plan, that of a Latin cross, need not be discussed, but it would appear that the design of the cathedral as it now exists was never completely embodied in any one set of drawings, but was gradually evolved during the construction of the building.

242. In form the plan of the existing building, Fig. 125, resembles that of a Gothic cathedral. It comprises a large west portico flanked by two towers, a wide nave and aisles, well-projected

transepts, and a small apse. A great dome, the outer part of which consists of wood covered with lead, rises from the crossing. The lantern above is supported by a hollow cone of brickwork, Fig. 126. In order to conceal the flying buttresses that support the main roof the walls of the aisles are raised to the level of the entablature of the upper order, as shown in the transverse section,

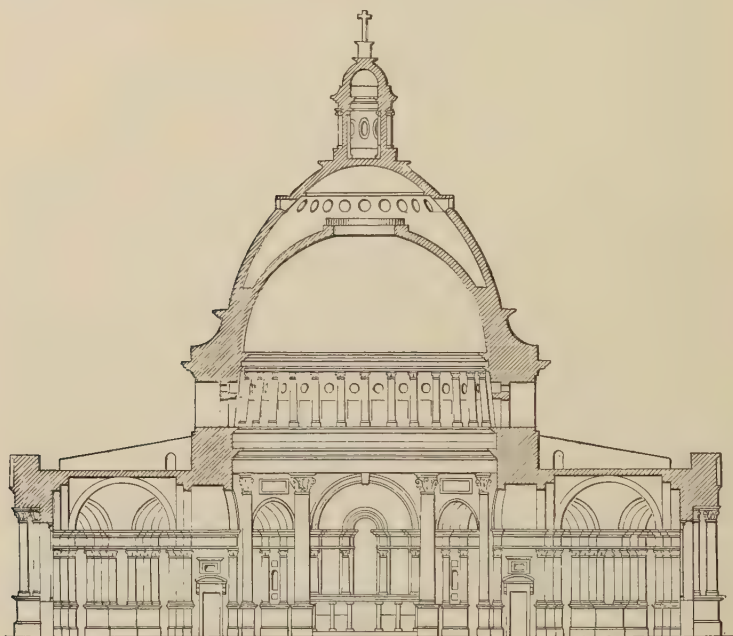


FIG. 124. WREN'S ORIGINAL DESIGN OF ST. PAUL'S CATHEDRAL

Fig. 127. The main floor of the cathedral is placed well above the level of the adjoining ground to obtain the requisite height for a spacious crypt.

243. The beautifully designed central dome, carried on eight large piers, consists of three structural parts, Fig. 128, comprising an inner dome forming the internal ceiling, a brick cone constructed to carry the weight of the crowning stone lantern with its ball and cross, and the outer dome of timber and lead, as seen from Fig. 126. The external effect of the dome is

much enhanced by the beauty of the circular colonnade with which it is surrounded immediately below the drum, and the skill whereby this central feature has been made to dominate the architectural composition from all points of view is little short of marvellous. The west front of this beautiful building is shown in Fig. 129 and the south side in Fig. 130, which is a reproduction of an old drawing.

244. Blenheim Palace. — The immense palace of Blenheim, Fig. 132, the gift of a grateful nation to the Duke of Marlborough, was the most important work of the architect Sir John Vanbrugh. Its magnificently conceived plan consists of a main block, Fig. 131, with a frontage of 320 feet placed at the end of a huge entrance court of the full width of the main building. Subsidiary courts to the

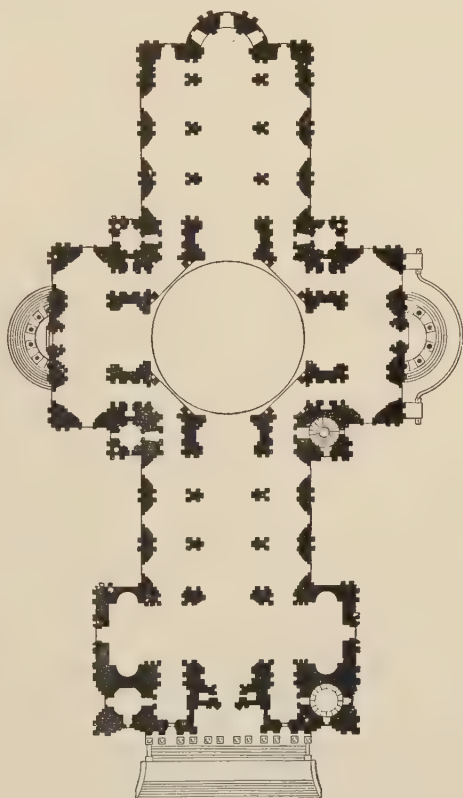


FIG. 125. PLAN OF ST. PAUL'S CATHEDRAL

right and left of the entrance court contain, on the one side, the kitchen and domestic offices and on the other the stabling. The total frontage of the main and subsidiary buildings amounts to nearly 860 feet. A large portico entrance, centrally placed in the façade of the main building, leads to a spacious and lofty inner hall, flanked on either side by staircases, and thence to the saloon and suites of living-rooms. Although ponderous in form and

somewhat coarse in detail, the outline of the building, Fig. 131, is varied and picturesque in form.

245. **Castle Howard, Yorkshire.**—Erected between the years

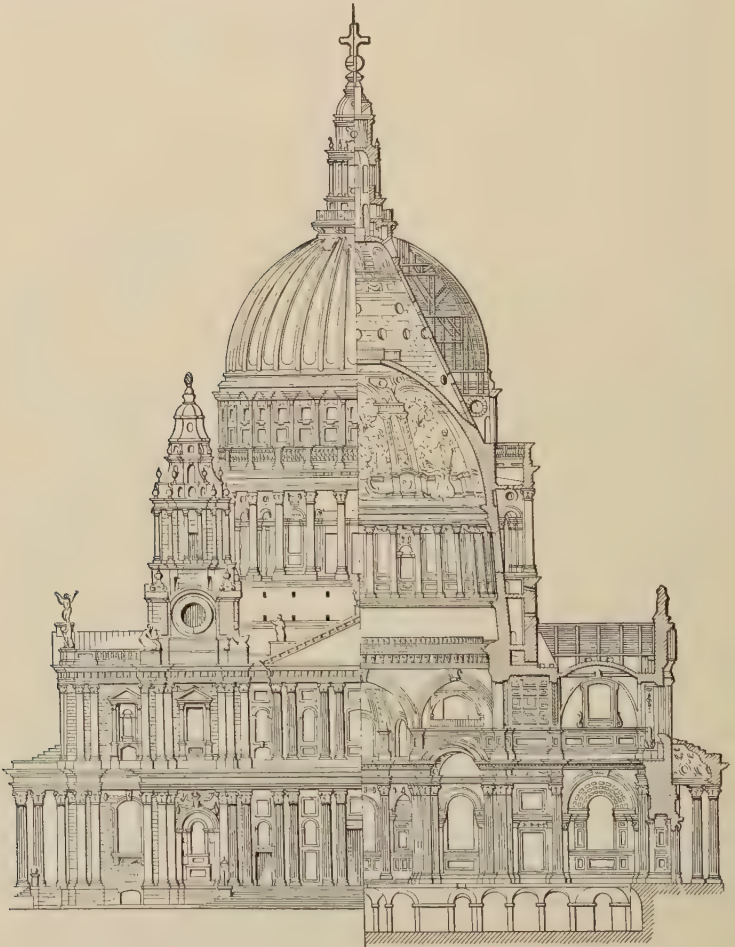


FIG. 126. HALF-SECTION AND HALF-ELEVATION OF ST. PAUL'S CATHEDRAL

1702 and 1714, Castle Howard, Fig. 133, is another and somewhat earlier example of the work of Sir John Vanbrugh. As will be seen on reference to Fig. 134, the plan of the main block has much

in common with that of Blenheim, Fig. 130. The projecting central portion, containing the principal entrance, domed hall, and staircases, is connected by colonnades with the wing buildings, which, well advanced into the front courtyard, act as screens to the kitchen and stable courts. Externally, the design suffers from the want of cohesion and continuity between the lofty central feature, Fig. 133, with its colossal order and huge entablature, and the low adjoining wings adorned with a comparatively small order and an entablature of modest dimensions.

246. The Church of St. John, Westminster.—The Church of St. John, Westminster, was built in 1721 to 1728 after the designs

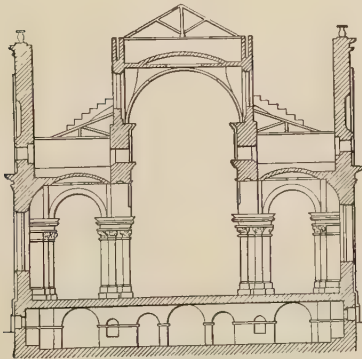


FIG. 127. TRANSVERSE SECTION
OF ST. PAUL'S CATHEDRAL



FIG. 128. SECTION OF DOME
OF ST. PAUL'S

of Thomas Archer. Singularly ugly and unattractive in its general design, it is notable for many useless and incongruous features, such as the huge broken pediments with no roofs behind them, seen in Fig. 135, and the balustraded tympanum shown in the same illustration.

247. Church of St. Martin - in - the - Fields.—This stately building, shown in Fig. 136, is one of the best of the many structures designed by James Gibbs. Its plan, Fig. 137 (a), comprises a nave separated from the adjoining aisles by an arcade of Corinthian columns, supporting small isolated portions of an entablature above which plaster arches cut into the elliptical-shaped roof of the nave, Fig. 137 (b). The fine hexastyle portico of the

church, composed of Corinthian columns 33 feet in height, and the well-proportioned spire, Fig. 138, are both good examples of



FIG. 129. WESTERN FAÇADE, ST. PAUL'S CATHEDRAL

the work of the scholarly and talented architect by whom they were designed.

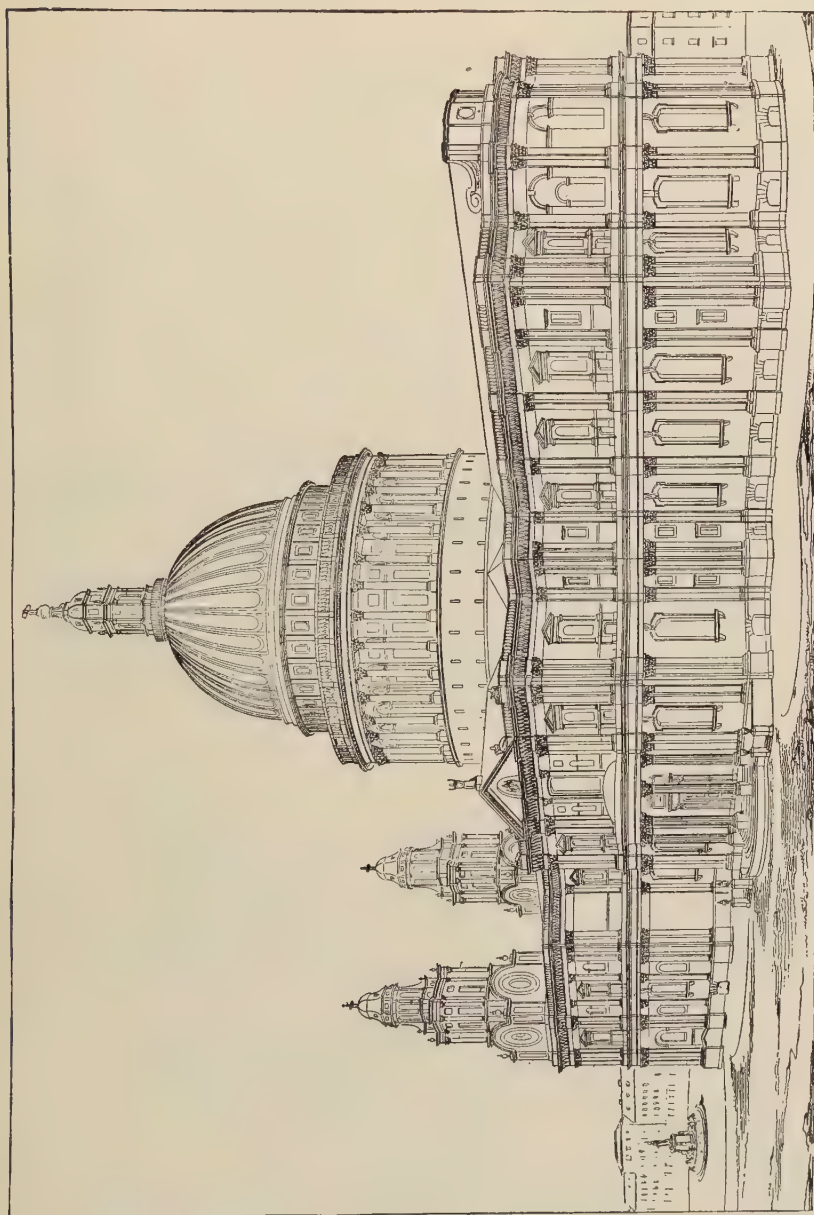


FIG. 130. SOUTH VIEW OF ST. PAUL'S CATHEDRAL

248. Radcliffe Library, Oxford.—The Radcliffe Library at Oxford was erected in 1737 to 1747 after the designs of James Gibbs under a bequest made to the university by Dr. Radcliffe. Its plan, Fig. 139, circular in form, comprises a crypt-like entrance



FIG. 131. BLenheim PALACE, WOODSTOCK

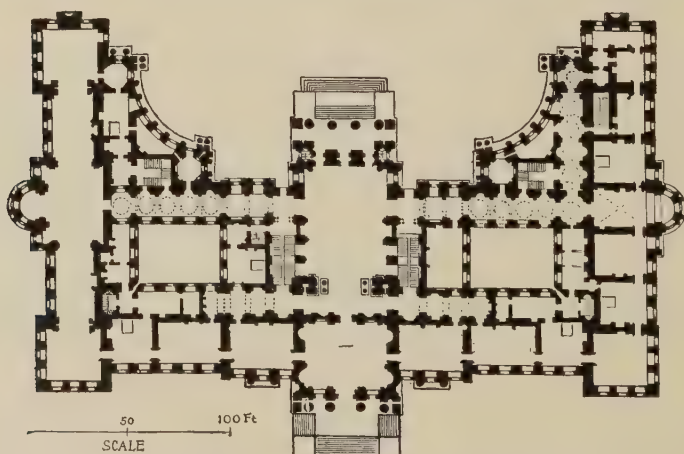


FIG. 132. PLAN OF BLenheim PALACE, WOODSTOCK

leading to the Library above, which has an upper floor arranged in the form of a wide gallery constructed behind the lofty arcade that carries the central dome, as seen in the section, Fig. 140 (*a*).



FIG. 133. CASTLE HOWARD, YORKSHIRE

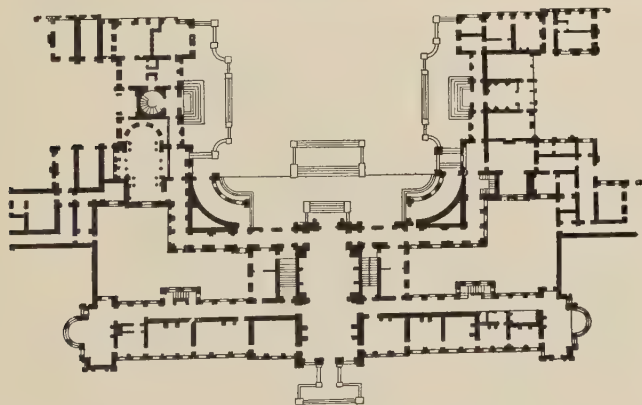


FIG. 134. PLAN OF CASTLE HOWARD

Externally, the design consists of a rusticated basement supporting sixteen groups of coupled Corinthian columns, 30 feet high,

crowned by a continuous balustraded entablature, as shown in the west elevation, Fig. 140 (*b*). A circular attic story, forming the drum of the dome, is set back a considerable distance from the external wall with which it is connected by the large ramped buttresses, seen in Fig. 140 (*a*). The dome, of timber and lead construction, is surmounted by a small lantern.

249. Somerset House, London.—This stately building, which was designed by Sir William Chambers and erected in 1776 to 1786, is notable as being the greatest architectural work of its period.

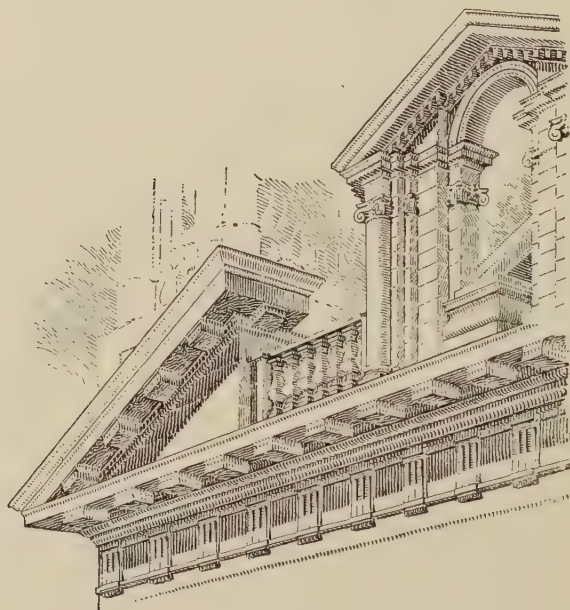


FIG. 135. PEDIMENT OF CHURCH OF ST. JOHN, WESTMINSTER

The façade to the Strand, about 133 feet in length and 62 feet in height, comprises a lofty rusticated basement above which a range of three-quarter Corinthian columns encloses two tiers of windows. An arcaded entrance of three arches, a half-bay of one of which is shown in Fig. 142 (*b*), modelled on the principal entrance of the Farnese palace at Rome, leads to a large inner courtyard, the southern extremity of which is occupied by the river front of the

building, a portion of which is shown in Fig. 141. The western wing of Somerset House, facing Wellington Street, shown in Fig. 143, is a later addition made by James Pennethorne in 1852 to 1856. Fig. 142 (*a*) illustrates the stone archway leading to the Inland and Revenue block of the huge building.

250. House in the Adelphi, London.—The eighteenth-century town house in Adelphi Terrace, London, shown in Fig. 144, is an example of the work of the brothers Robert and James Adam, whose designs are marked by a certain severity of treatment combined with detail of a refined and delicate nature. These architects, who designed many buildings in London and all parts of the kingdom, introduced a style



FIG. 136. CHURCH OF ST. MARTIN-IN-THE-FIELDS, LONDON

of stucco enrichment that was often successfully applied for the ornamentation of ceilings and walls. Old houses in London and the provinces show fine examples of these internal decorations.

BUILDINGS FROM GREEK REVIVAL PERIOD

251. Fitzwilliam Museum, Cambridge.—Much of the attractiveness of this well-proportioned façade, Fig. 145, is due to the boldly projecting tower-like masses of masonry. It is carefully

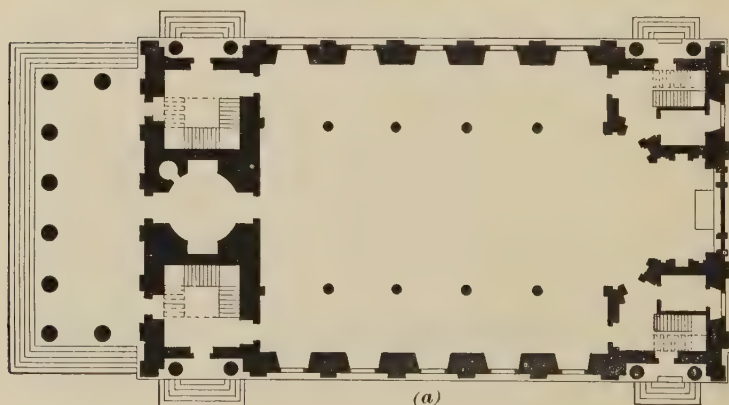
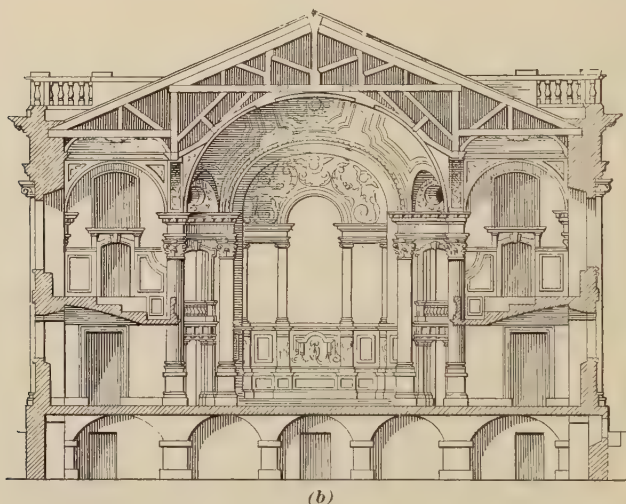


FIG. 137. PLAN AND SECTION OF ST. MARTIN-IN-THE-FIELDS

designed according to antique examples and in many respects reflects great credit on its architect, George Basevi.

252. St. George's Hall, Liverpool.—St. George's Hall, Liverpool, is probably the most successful example in the world of the adaptation of classic architecture, in its purest form, to modern requirements. The building comprises a large central hall, about 170 feet in length, rising to a height of 85 feet and modelled on the great halls of the thermæ at Rome. Court rooms, 60 feet by 50 feet in area,

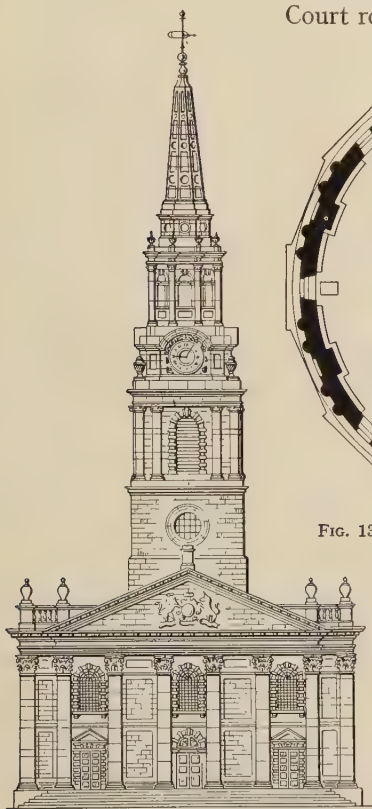


FIG. 138. ST. MARTIN-IN-THE-FIELDS

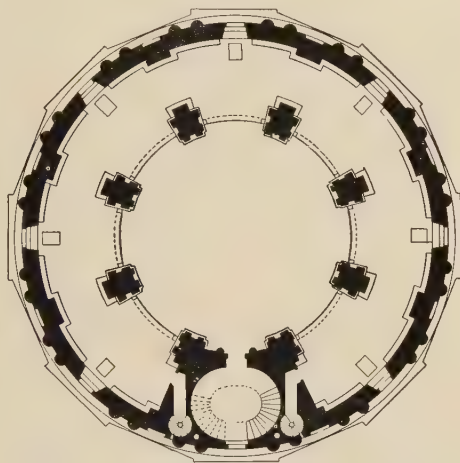
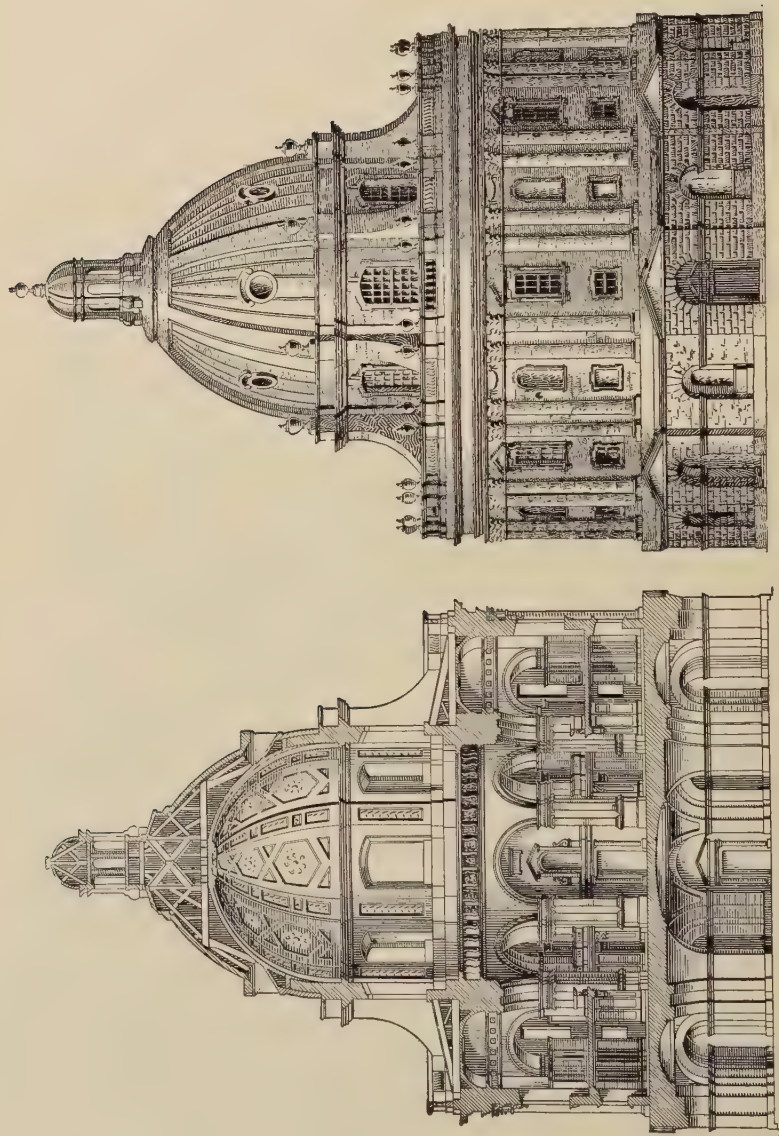


FIG. 139. PLAN OF RADCLIFFE LIBRARY, OXFORD

flank each end of the large hall, and beyond are a concert room and other smaller apartments. The huge portico of sixteen Corinthian columns, 46 feet in height, that adorns the principal façade extends along the entire length of the hall. The south front of the building,

Fig. 146, has an octastyle portico the pediment of which is liberally enriched with sculpture. This beautiful and scholarly building, designed by Elmes in the early part of the nineteenth century, is by far the best of those built during the course of the so-called Greek revival in this country.



(b)

FIG. 140. SECTION AND ELEVATION OF RADCLIFFE LIBRARY, OXFORD

(a)

253. **Royal Exchange.**—The Royal Exchange, London, designed by Sir William Tite and erected in 1839 to 1844, is quadrangular in form. From the large octastyle Corinthian portico,

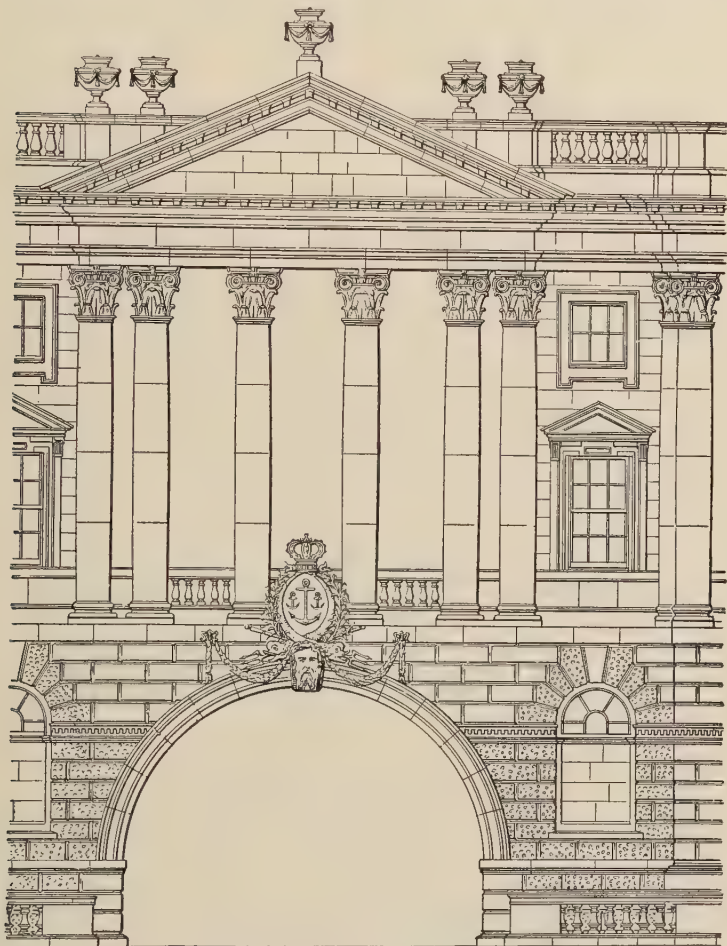


FIG. 141. PORTION OF RIVER FRONT, SOMERSET HOUSE

Fig. 147, the pediment of which is ornamented with sculptured figures by Westmacott, access is gained to the internal court, 170 feet long and 113 feet wide, surrounded by an ambulatory the walls of which are relieved by armorial bearings painted in fresco.

The clock tower, on the east side of the court, is surmounted by a gilt grasshopper, the device of Sir Thomas Gresham, who erected the first Exchange, which he presented to the city in 1570. Destroyed in the Great Fire of London, Sir Thomas Gresham's

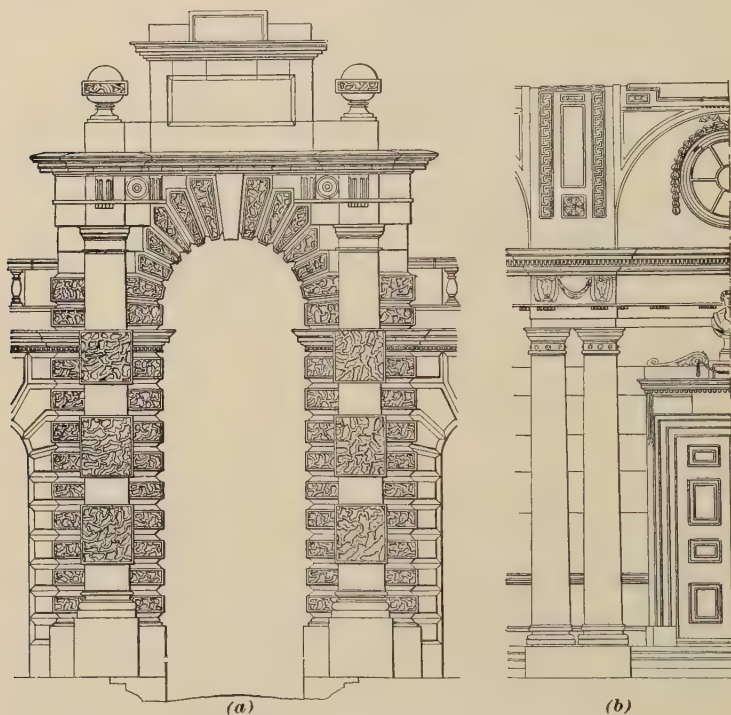


FIG. 142. ARCADE AND ARCHWAY, SOMERSET HOUSE

building was succeeded in 1669 by the second Exchange, demolished in 1838 after being partially burned down. The bronze equestrian statue of Wellington, by Chantry, was erected in 1844.

DETAILS OF BUILDINGS

PLANS, WALLS, ROOFS, AND ORNAMENTATION

254. Plans.—House planning rapidly developed under the influence of Inigo Jones and Wren, and great alterations appeared in the internal arrangement of domestic buildings. In the

houses of the Early Renaissance period access from one part of the building to another could usually only be obtained either from the internal courtyard, by traversing a long gallery, or through intercommunicating doors in each room. This primitive method of planning gradually gave place to the modern system, under which spacious corridors and centrally placed staircases afforded convenient access to all parts of the house. Church planning was also developed, chiefly by Wren, whose plans for ecclesiastical buildings are very varied in form and arrangement.



FIG. 143. WESTERN WING OF SOMERSET HOUSE, LONDON

During the best period of the Renaissance plans became more orderly in their disposition, and regularity and symmetry of outline superseded the picturesque irregularity of form prevalent in Gothic times.

255. Walls.—When the Renaissance was fully developed in this country the lower portions of the walls of important buildings were often rusticated and the upper parts faced with large blocks of wrought stone laid in regular courses. The use of the orders became general and classic porticoes and windows with pedimented heads were common features of late seventeenth- and eighteenth-century buildings. Towers were comparatively rare,

but domes of all sizes were constantly used for the adornment of buildings. Bricks were in frequent request for the walling of Early Renaissance buildings, and in the time of Charles II, when England and Holland were closely associated, rubbed brickwork with thin joints was introduced into this country from Flanders

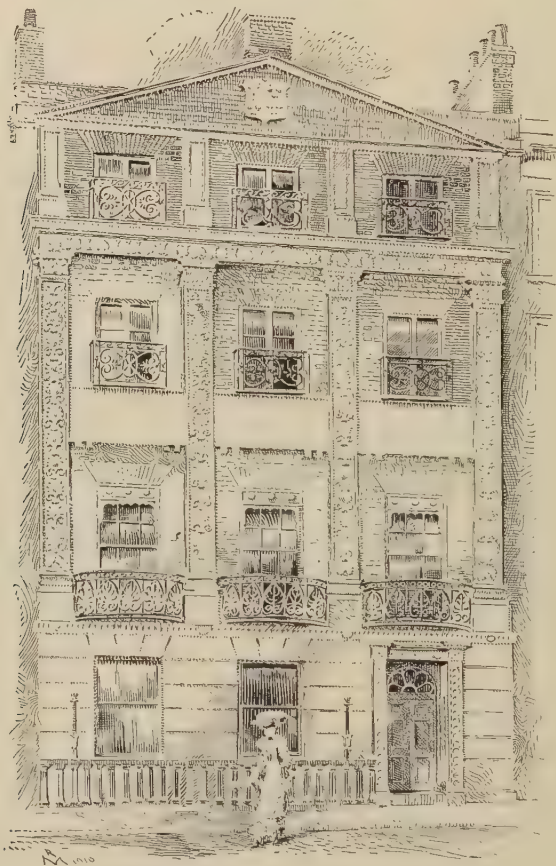


FIG. 144. HOUSE IN THE ADELPHI, LONDON

and used with charming effect in the domestic work of Wren and other architects.

256. Roofs.—Although roofs of high pitch were largely used for the smaller domestic buildings, yet the palatial structures of

the eighteenth century were usually covered with low roofs concealed behind the main entablature.

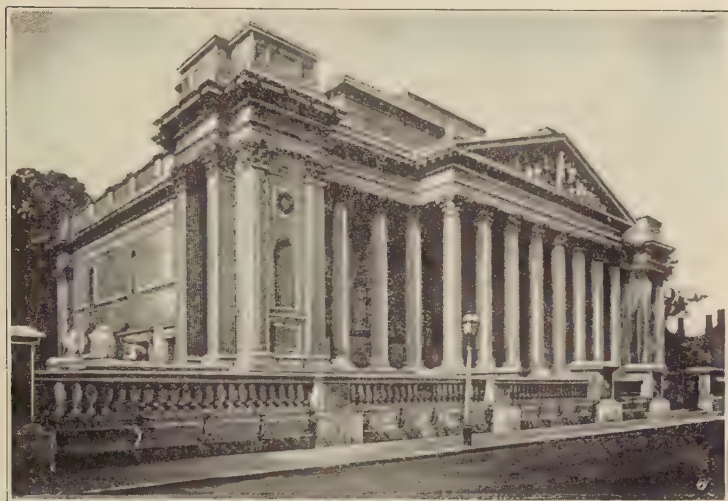


FIG. 145. FITZWILLIAM MUSEUM, CAMBRIDGE



FIG. 146. ST. GEORGE'S HALL, LIVERPOOL

257. Columns.—In the early Renaissance buildings the columns and pilasters used for the adornment of the walls were banded with strap work or fluted and otherwise enriched. The

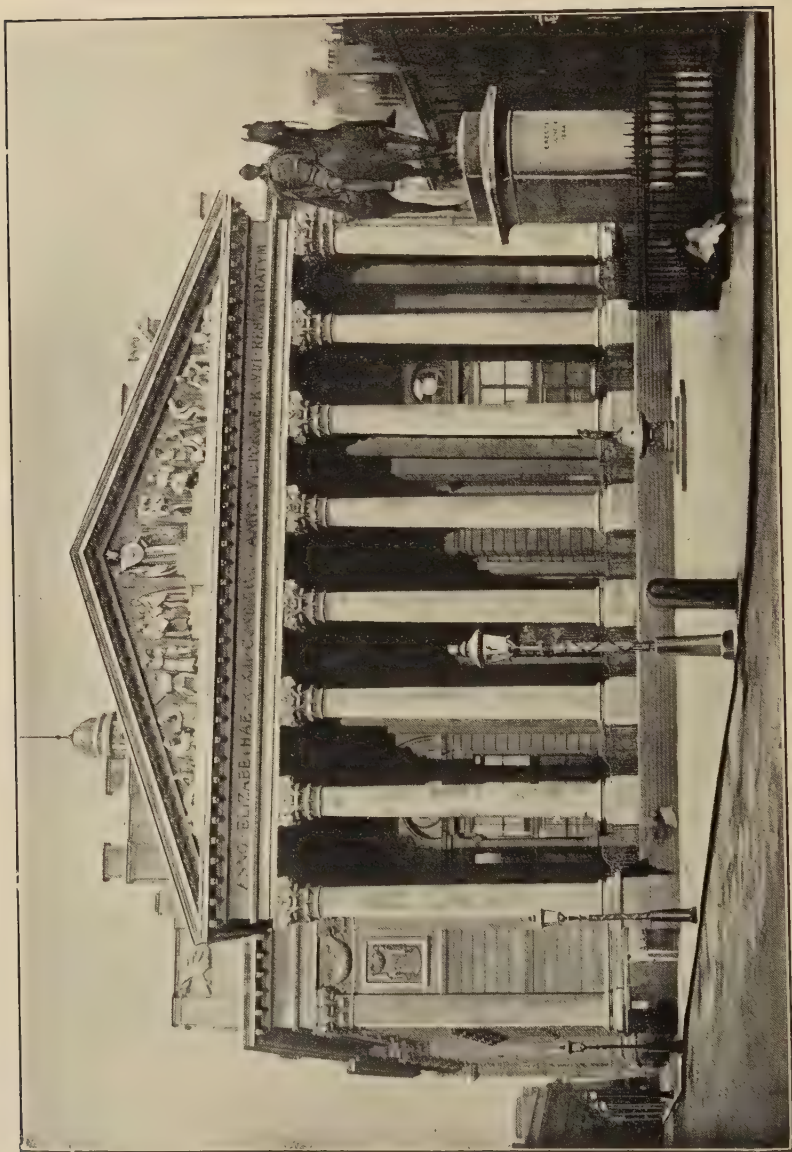


FIG. 147. ROYAL EXCHANGE, LONDON

introduction of the *real* Italian Renaissance into this country under the auspices of Inigo Jones was followed by the closer reproduction of the classic order's, which perhaps reached its culminating point when the true spirit and the motifs on which the elements of Greek architecture were based began to be studied and more fully understood.

258. Openings.—The windows of the early Renaissance period, Gothic in character, were divided into numerous lights by stone mullions and transoms. But when the matured Italian Renaissance architecture was brought into the country the windows

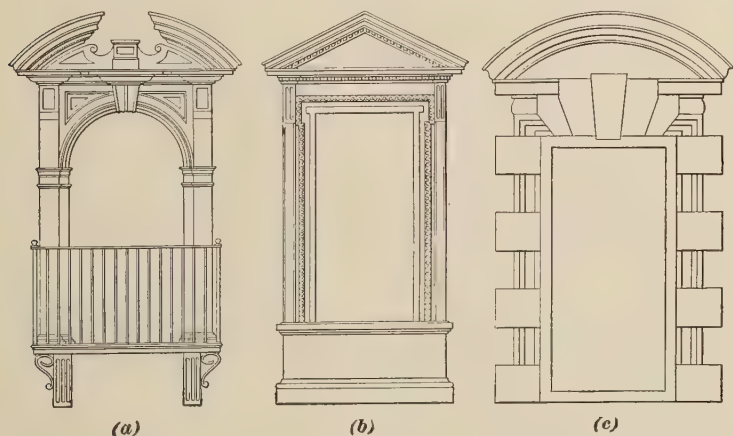
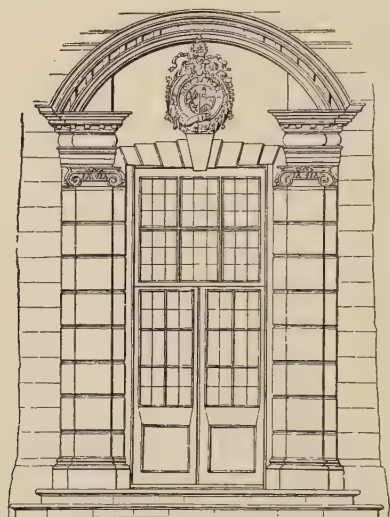


FIG. 148

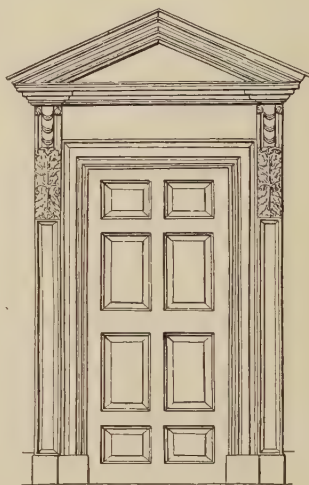
and doorways of Italian palaces were reproduced. Of the windows shown in Fig. 148, that at (a) is from the central gable of the principal front of Kirby Hall, Northamptonshire, that at (b) from the Banqueting Hall, Whitehall, London, and that at (c) from Greenwich Hospital. Of the three doorways illustrated in Fig. 149 the first one at (a) belongs to the Early period of English Renaissance, that at (b) to the Middle period, and that at (c) to the Late period.

259. Ornamentation.—Examples of the early Renaissance strap-work and other ornamentation, show by reason of the predominant influence of foreign artisans, necessarily more of a

foreign than English style. Thus the variety of ornamentation given in Fig 150 (a) to (i) are chiefly of Germanic origin. They



(a)



(b)



(c)

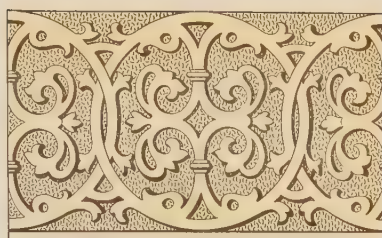
FIG. 149

represent arabesque ornaments of friezes and panels some of which are executed in wood, while others were moulded in plaster. At the time of Inigo Jones Renaissance decoration began to assume a more coherent and definite form. At this period the plaster ceilings, covered with the meaningless arabesque ornamentation of the Early period, gave place to panelled ceilings arranged in a variety of geometrical

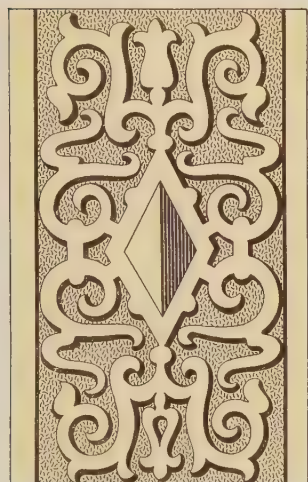
forms and enriched with foliated or other ornamentation



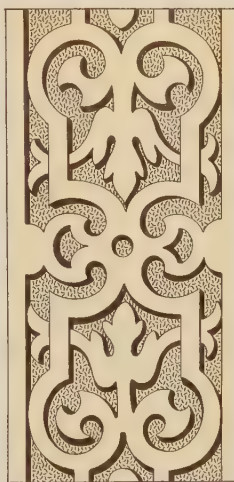
(a)



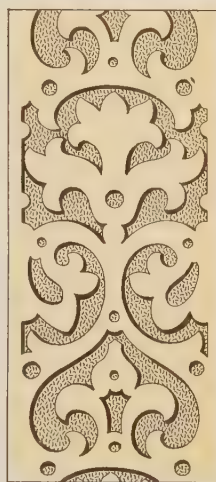
(b)



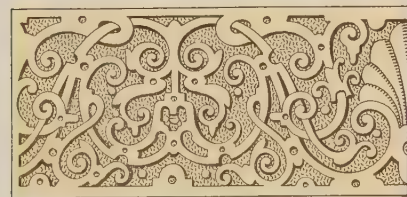
(c)



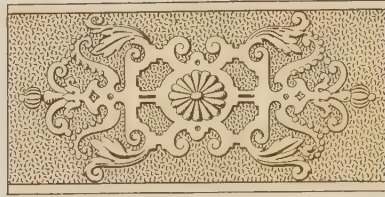
(d)



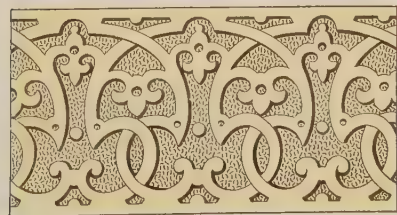
(e)



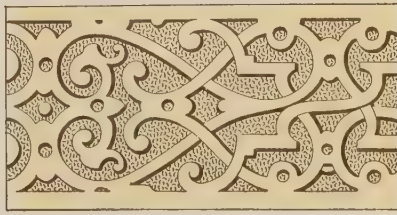
(f)



(g)



(h)



(i)

derived from ancient Rome. Examples of such ceilings are shown in Fig. 151 (*a*), (*b*), and (*c*). The characteristic Elizabethan or Jacobean fireplaces overladen with German ornamentation, as seen from the elaborately decorated fireplace illustrated in Fig. 152 (*a*), were superseded, at a later stage of English Renaissance art, by fireplaces of an entirely different character, an example of which, designed by Chambers, is given in Fig. 154.

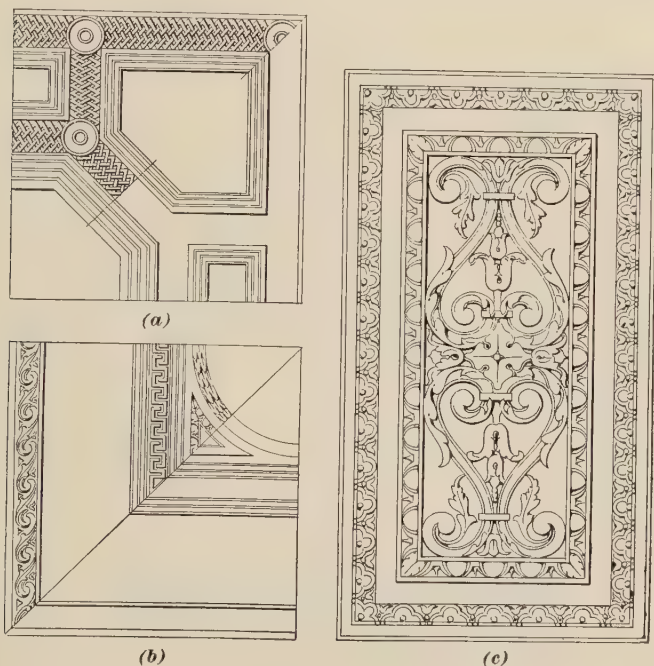
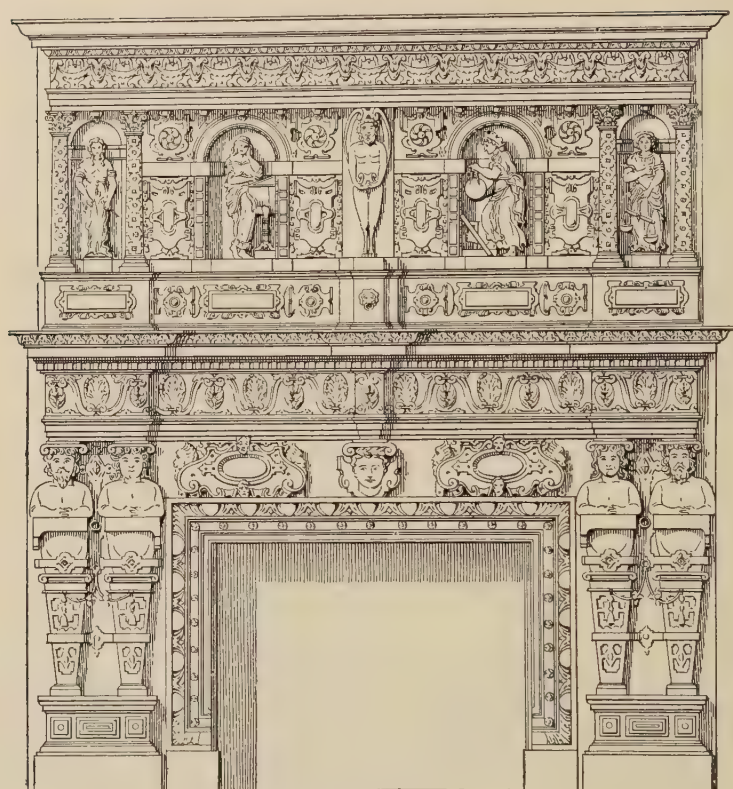
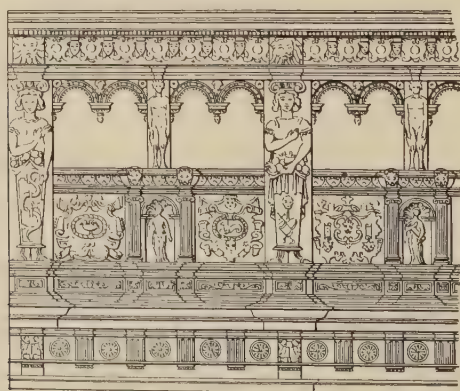


FIG. 151

An early Renaissance doorway, from Kirby Hall, is shown at Fig. 153 (*a*), an example of oak panelling enriched with carving from the screen of Middle Temple Hall at Fig. 152 (*b*), and an external stone arcaded porch with a bay window at Fig. 153 (*b*). Examples of later Renaissance ornamentations are given in Fig. 155, where illustrations (*c*), (*d*), and (*e*) represent some typical panel enrichments used in cupolas and those at (*a*) and (*b*) ornamentations for the soffits of arches.

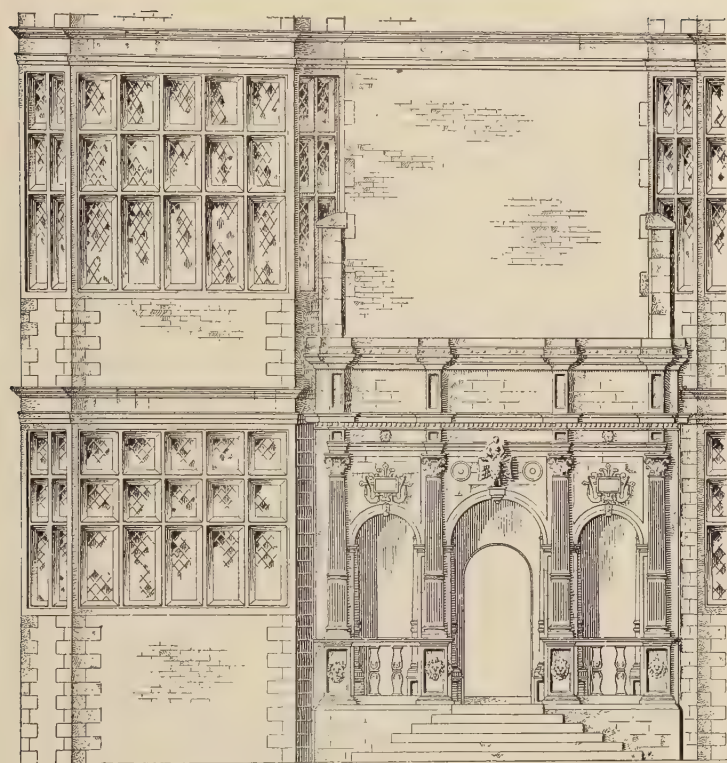


(a)



(b)

FIG. 152



(b)



(a)

FIG. 153

RECENT ENGLISH ARCHITECTURE

GOTHIC AND RENAISSANCE REVIVALS

260. Experiments in Gothic Art.—The Gothic revival that set in during the early part of the nineteenth century was slow in arriving at its full development in this country, but long before the movement excited general interest many isolated attempts had been made to revive mediaeval art. Experiments in Gothic

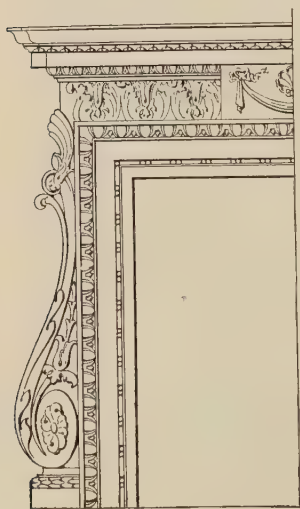


FIG. 154

architecture by Wren at the churches of St. Dunstan-in-the-East and St. Michael's, Cornhill, by Hawksmoor at All Saints', Oxford, and by other classic architects need not be seriously considered, as in most cases a style of architecture with which the architect had neither sympathy nor aptitude was forced on him. But the fashion set in 1760 to 1770 by Horace Walpole in his so-called Gothic buildings at Strawberry Hill attracted considerable attention and aroused the spirit of emulation in other persons of wealth and position.

261. In 1795 the spacious grounds of Fonthill Park were covered with large monastic buildings of a mediaeval character by William Beckford, but a greater impetus was subsequently given to the movement by a group of able writers and artists, such as Britton, Pugin, Rickman, and others, whose energies were zealously directed toward its support. The earlier results were disastrous in the extreme, but with increasing knowledge and experience came greater archæological

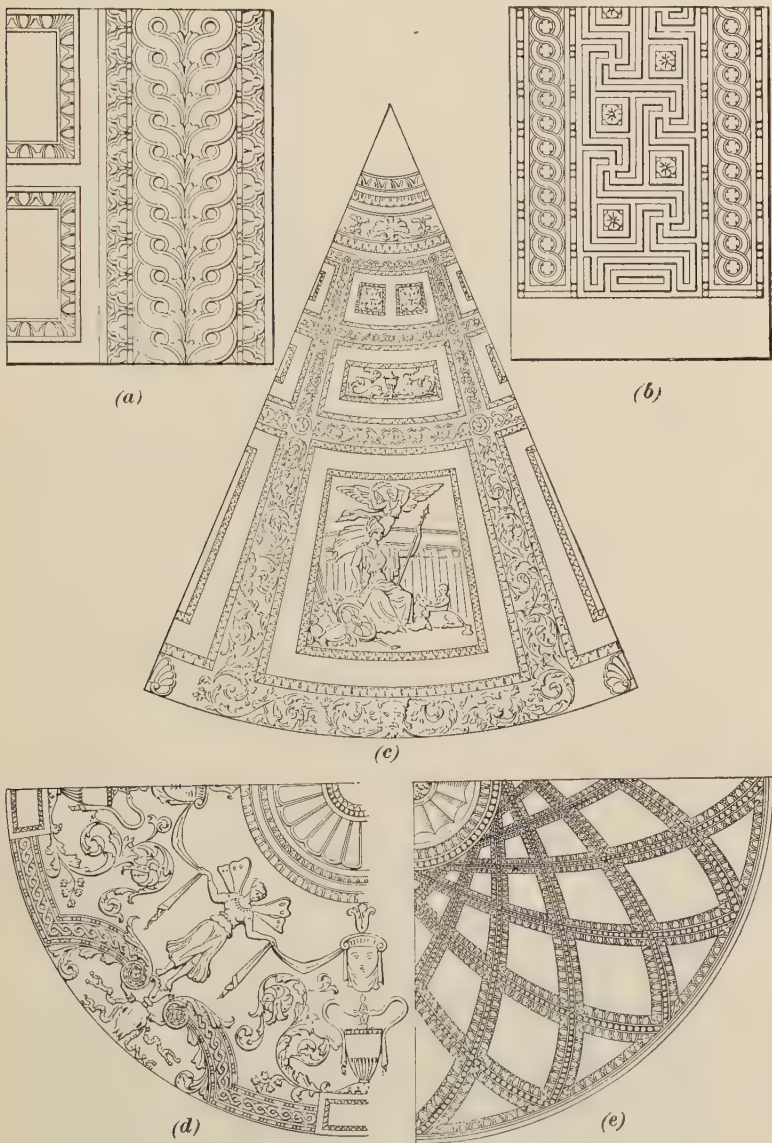


FIG. 155



FIG. 156. HOUSES OF PARLIAMENT, LONDON

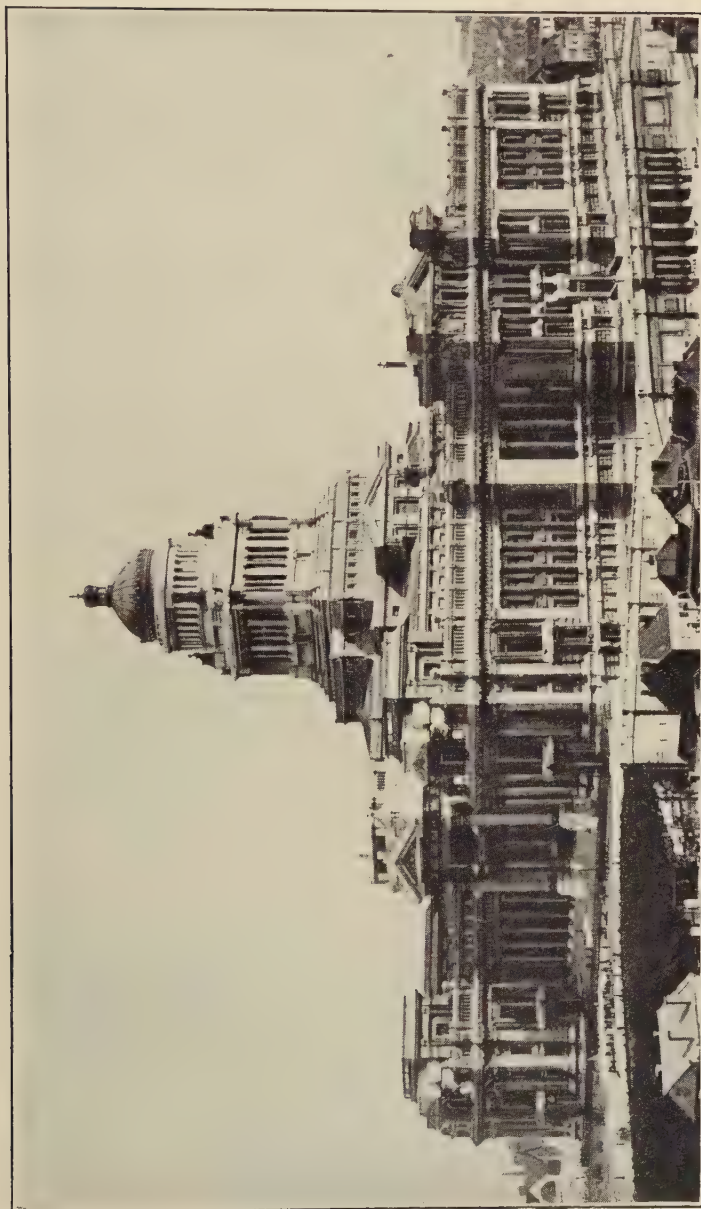


FIG. 157. PALAIS DE JUSTICE BRUSSELS

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correctness and a more sympathetic reproduction of Gothic forms and ornamentation.

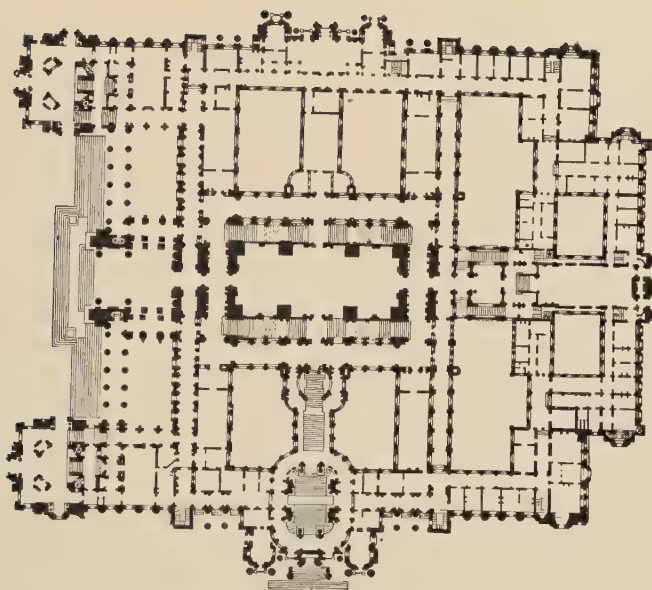
262. Houses of Parliament.—The Houses of Parliament, Westminster, erected, in the Perpendicular style, by Sir Charles Barry, are among the most important of the many public buildings constructed in recent times during the Gothic revival. The immense river front, Fig. 156, over 940 feet in extent, is notable for the simplicity of its outline and for the refinement of its delicately carved detail.

263. Renaissance Revival.—Within the last twenty years Renaissance architecture has again become predominant in this country, but, unfortunately, its reintroduction has not hitherto been attended with any conspicuous amount of success.

RECENT CONTINENTAL ARCHITECTURE

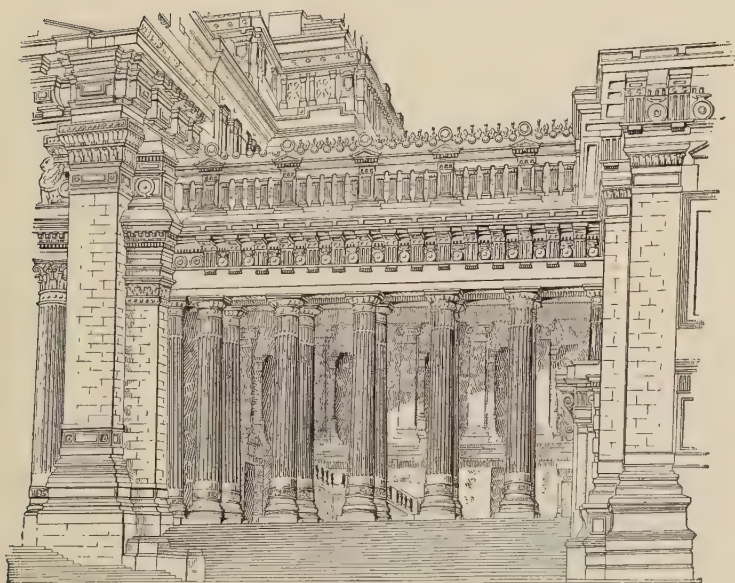
DIFFERING TENDENCIES IN STYLES

264. Some Prominent Buildings.—On the whole France has maintained her position during recent years as the most art-loving nation in the world. This result is mainly due to the general rigid adherence by French architects to the academic theory of architecture so well inculcated at the famous centre of art study, the École des Beaux Arts, Paris. Among the noteworthy French buildings of our time are the new Hôtel de Ville at Paris, in which the architectural style of the old structure it replaced has been more or less closely followed; the fine façade of the École de Médecine; and the new Opera Comique. The modern architectural output of Germany has been less satisfactory owing to the fact that the recent classic buildings of that nation, although often grandiose in conception, are usually somewhat coarse and unscholarly in execution. Examples of German Renaissance architecture of our day are seen in the Houses of Parliament and the new cathedral at Berlin. The modern buildings of Vienna are of a more refined classic type, but at Budapest, the rival



(a)

PLAN OF PALAIS DE JUSTICE, BRUSSELS



(b)

capital of the Austrian Empire, the largest and most important buildings of the period, the new Parliament Houses, have been built in the Gothic style. In Belgium is found what is probably the most original and remarkable building of recent times, namely, the well-known Palais de Justice or Law Courts of Brussels.

265. The Palais de Justice, Brussels.—This huge modern structure, shown in its entirety in Fig. 157, was designed by the architect Poelaert. It was commenced in 1866 and opened in 1883 at the jubilee of Belgium's existence as an independent kingdom. Internally, the building, which is illustrated by a plan of the principal floor, Fig. 158 (*a*), and a view of a portion of the façade, Fig. 158 (*b*), includes 27 large court rooms, over 240 smaller rooms, and 8 open courts. The gilded cross on the top of the dome is some 400 feet above the pavement and dominates the principal façade, which has a large portal and projecting wing buildings. Architecturally, the composition of the structure with its trabeated treatment of the openings is reminiscent of ancient Assyrian art.

AMERICAN ARCHITECTURE

PRINCIPAL PERIODS

COLONIAL PERIOD

266. The history of the United States, so far as its architecture is concerned, is divided into three parts comprising (1) the period of its colonization, which may be called the Colonial period; (2) the period during which Italian art was developed in the country, which constitutes the Renaissance period; and (3) recent American architecture.

267. Naturally enough, the earliest buildings of the colonizing period were of timber construction. The first structures of a permanent character were those erected in the Dutch colonies with bricks imported from Europe, and it was not until well into the eighteenth century that English settlers began to construct

plain and unpretentious buildings of brick or brick and timber. With the increase of wealth and population, about the middle of the eighteenth century, came a great development in the architecture of the period, probably mainly brought about by the circulation in the American colonies of the well-illustrated works on architecture and the orders that were then in great demand in the home country.

268. The publication of works on architecture in England had inculcated a general knowledge of architecture among all



FIG. 159. CRAGIE HOUSE, CAMBRIDGE, MASSACHUSETTS

classes of the community in that country and a similar result seems to have followed the arrival of the "pattern" books, as they were, somewhat significantly, called in the colonies. Thus, the American Colonial style was based on the phase of English architecture, known as Georgian, of which the chief exponents were Wren and Gibbs.

269. The colonial churches of this date, whether of wood, brick, or stone construction, clearly showed the influence of contemporary architecture in England, and both in their internal

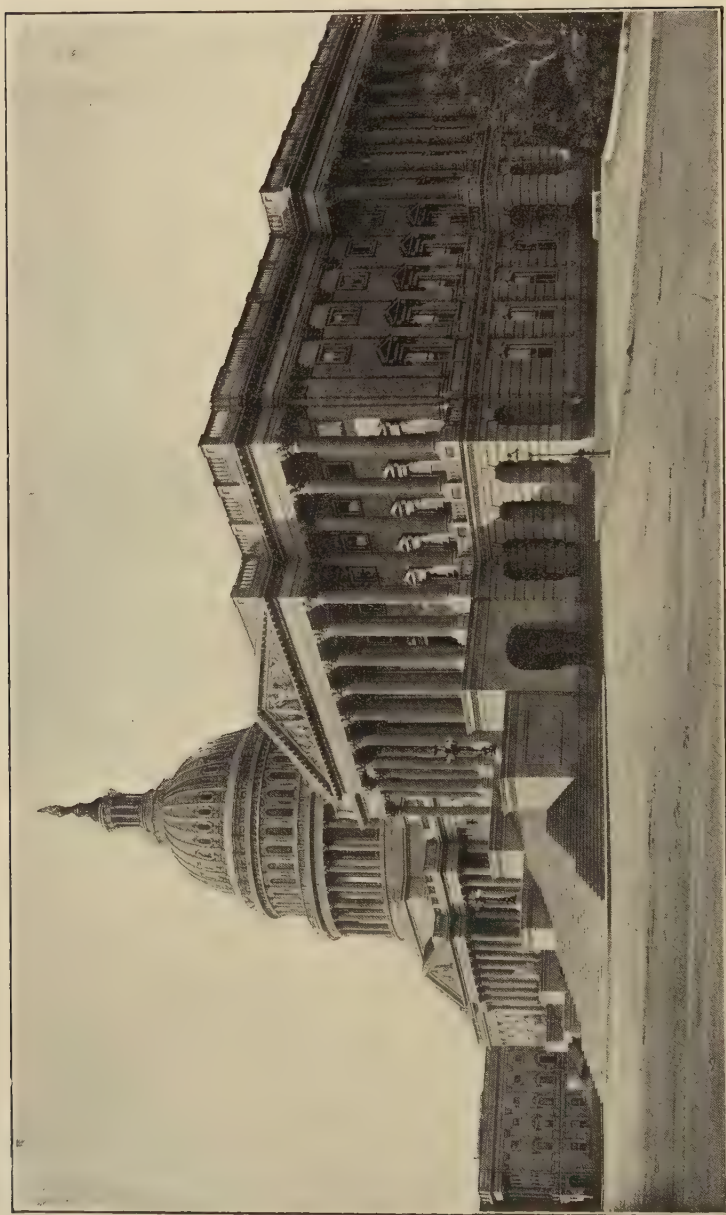


FIG. 160. CAPITOL AT WASHINGTON

finishings and external aspect American houses were very similar to their English prototypes. This similarity is observable in the view, Fig. 159, of the old Cragie House, at Cambridge, Massachusetts, built in 1757.

RENAISSANCE PERIOD

270. After the declaration of Independence, in 1783, American architecture made further progress and numerous stone buildings of a monumental nature were erected for State administrative purposes. Among the earlier structures of this class was the United States Capitol at Washington, Fig. 160, the central portion of which was built in 1793. The two wings were added in 1830



FIG. 161. THE WHITE HOUSE, WASHINGTON

and the dome, an iron structure, painted to imitate stone, in 1858 to 1873.

271. Fig. 161 illustrates the painted-stone building, known as the White House, erected in 1792 to form the official residence of the President of the American Republic. Greek influence is paramount in the Girard College at Philadelphia, Fig. 162, constructed of marble in the form of a classic temple.

272. Within the last forty or fifty years the progress of American architecture has been very rapid. The great fires at

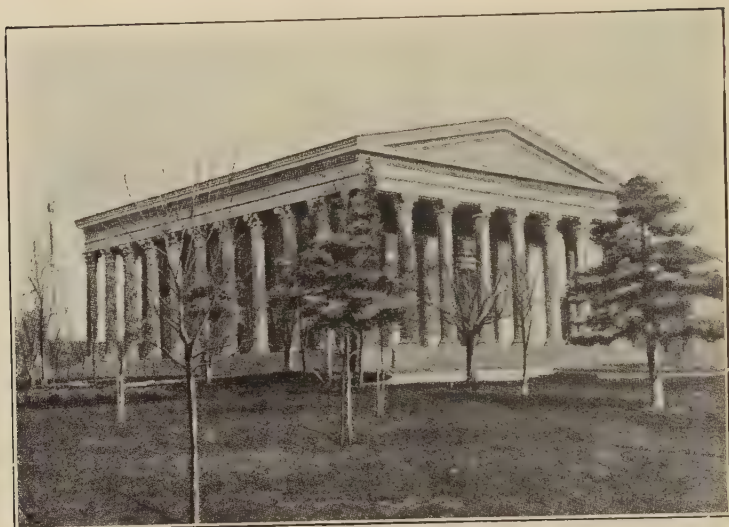


FIG. 162. GIRARD COLLEGE, PHILADELPHIA



FIG. 163. TRINITY CHURCH, BOSTON

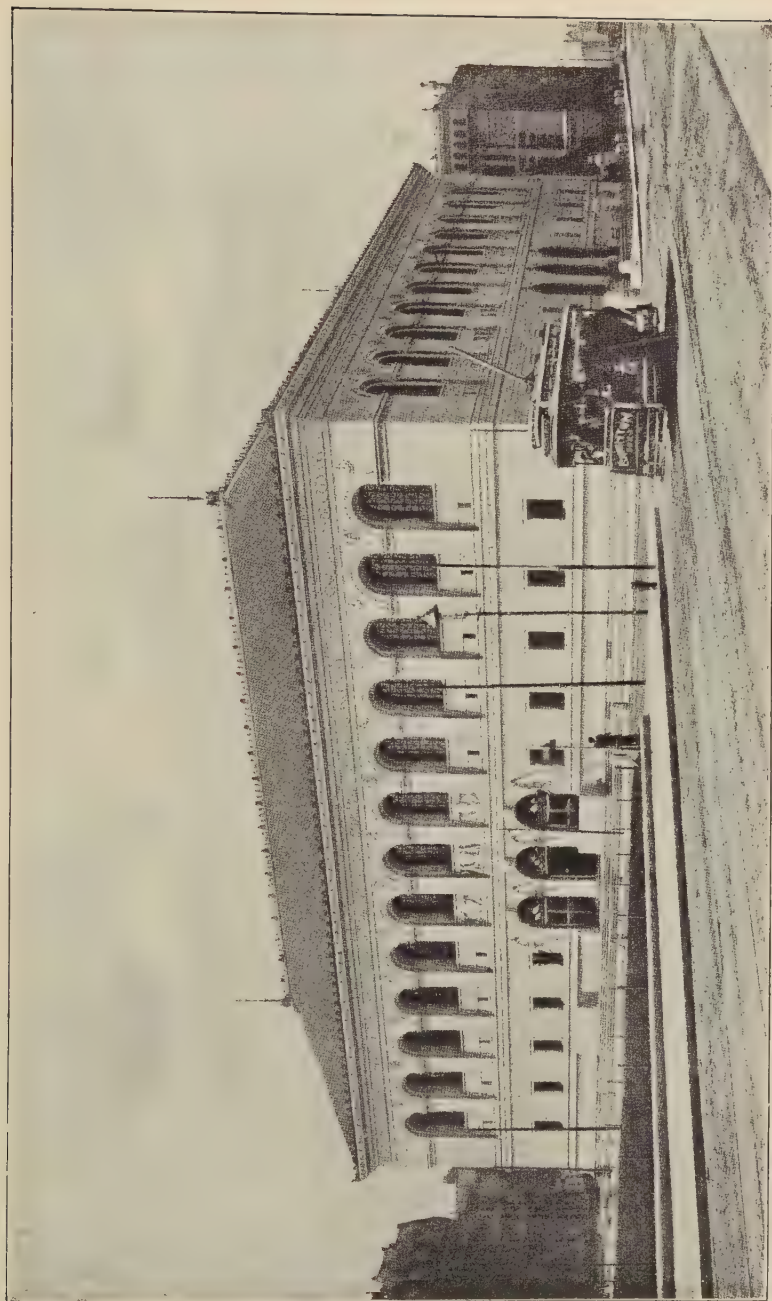


FIG. 164. PUBLIC LIBRARY, BOSTON

Chicago and Boston, resulting in the destruction of an immense number of public and private buildings, aroused public interest in the art of architecture. This awakening was further stimulated by the establishment of schools of architecture in Boston and other cities in which the system of study adopted was based on that so long and so successfully in vogue at the École des Beaux-Arts,



FIG. 16J. MADISON SQUARE GARDEN, NEW YORK

Paris, where some of the leading American architects of the day had received their professional training. French influence has not led to the slavish adoption in America of the architecture of France, but has had the happier result of inspiring the American architects of to-day with a due appreciation of the spirit of monumental design, and of providing them with an intimate knowledge of its

fundamental requirements or first principles, in addition to affording a clearer perception of the architectural value of scholarship, proportion, harmony, symmetry, and the geometrical disposition of the plan.

273. Despite their thorough course of training in the principles of antique art, American architects are essentially eclectic in the



FIG. 166. WOOLWORTH BUILDING, NEW YORK

selection of their styles of design. Thus, Trinity Church, Boston, illustrated in Fig. 163, which is a free treatment of Romanesque art, was designed by the Beaux-Arts student Henry Hobson Richardson, 1828 to 1886. In the architecture of the Public Library, Boston, Fig. 164, an equal disregard of the contemporary styles and fashions prevalent in other countries is apparent. Fig. 165 illustrates the Madison Square Garden, New York, a well-known example of the work of McKim, Mead, and White, and Fig. 166, the tower-like fifty-five storied

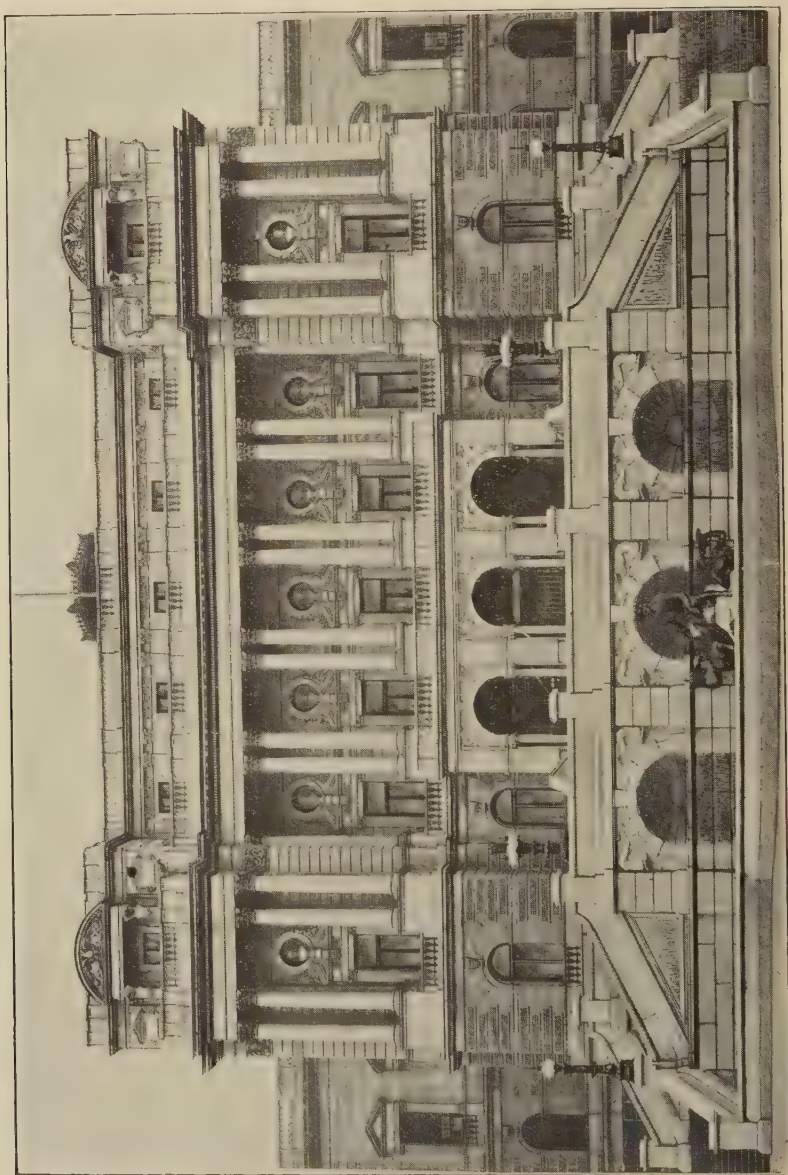


FIG. 167. LIBRARY OF CONGRESS, WASHINGTON

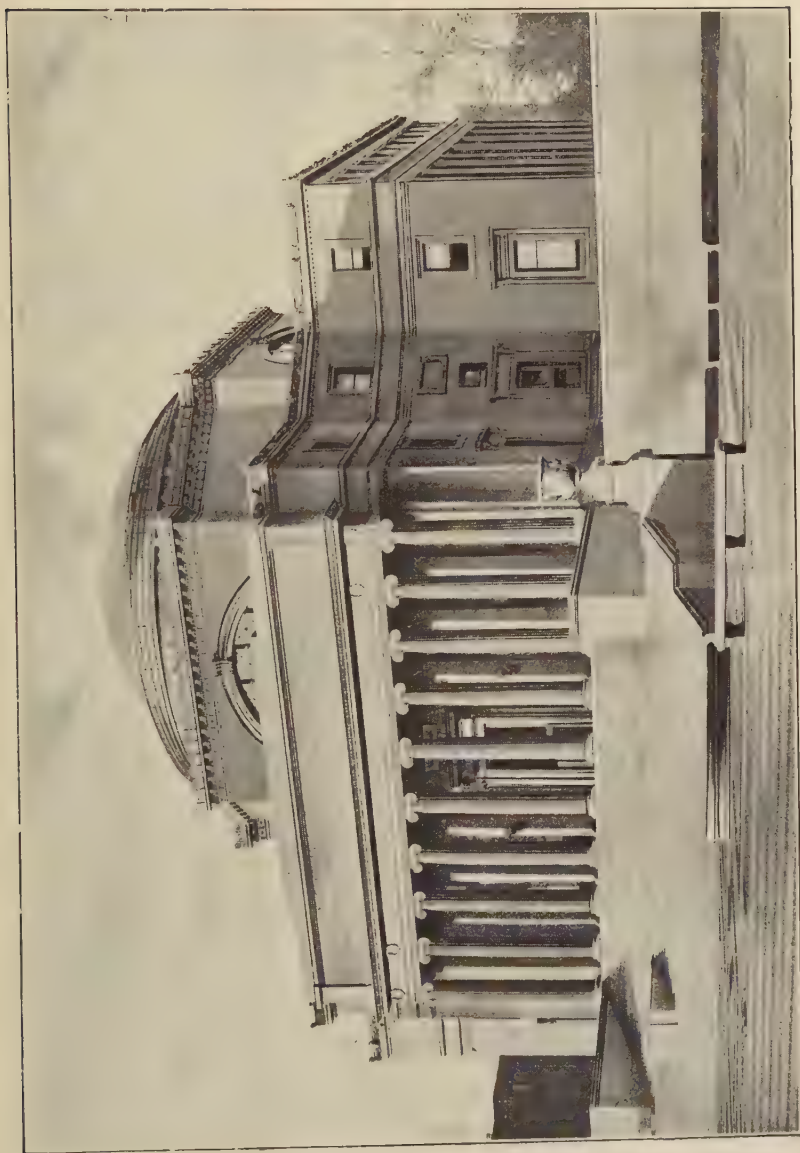


FIG. 168. LIBRARY OF COLUMBIA UNIVERSITY, NEW YORK

structure that rises to a height of 750 feet, known as the Woolworth Building, New York.

274. Library of Congress, Washington.—Designed by Smithmeyer and Pelz, the Library of Congress, Washington, is one of the many examples of recent American architecture in which the influence of foreign art can be distinctly traced. Fig. 167 illustrates the central portion of the west front of this fine building. Of the various elements that form part of the able design the terrace approach, the arcaded portico, and the lofty open colonnade, surmounted by a low attic, of the upper part of the structure are all favourite features of French Renaissance art.

275. Library of Columbia University, New York.—The Library of Columbia University, New York, shown in Fig. 168, is one of a large group of stately buildings designed by McKim, Mead, and White for that university. Inspired by the classic formalism of the art of Greece, this fine library is a good example of the adaptation of ancient architecture to modern requirements. The spacious Ionic portico approached by a wide flight of steps adds considerably to the grace and monumental dignity of the structure.

INDEX

NOTE.—All items in this index refer first to the section and then to the page of the section. Thus, *Abacus*, §85, p77 means that *Abacus* will be found on page 77 of section 85. When there are several items having the same key word, this is, for brevity, omitted after the first reference, and the other items are indented, or set in, from the left margin, to indicate this omission, which never consists of more than one word. Thus, under the key word *American* is found the indented item *architecture*, *Principal periods of*, §88, p200; this is read *Principal periods of American architecture*, §88, p200; the capitalization of *Principal* denoting the first word of the reference.

A

- Abacus, §85, p77.
- Abbaye-aux-Hommes, §86, p78.
-aux-Hommes, Caen, Plan of, §86, p80.
- Abbey Church of St. Ouen, §87, p26.
Church of St. Ouen, Rouen, Plan of, §87, p28.
Essex, Waltham, §86, p129.
of Mont St. Michel, Normandy, §87, p27.
Westminster, §87, p129.
- Acropolis, §85, pp56, 60, 63.
Athens, Plan of, §85, p57.
- Acroteria, §85, p81.
Acroterium, §85, p69.
- Adelphi, London, House in, §88, p179.
- Æci, §85, p126.
- Æcus, §85, p125.
- Age, Greek Prehistoric, §85, p60.
- Agra, Mausoleum at, §86, p42.
Mosque and Mausoleum at, §86, p42.
- Akbar, Mosque at, §86, p42.
- Alcazar, Seville, §86, p40.
Toledo, §88, p145.
- Alhambra, Granada, §86, p38.
- All Saints', Stamford, §87, p169.
- Alterations in Greek orders, Roman, §85, p136.
- Alternation, §85, p92.
- Ambones, §85, p138.
- American architecture, §88, p200.
architecture, Principal periods of, §88, p200.
Renaissance period, §88, p203.
- Amiens Cathedral, §87, p23.
Cathedral, Plan of, §87, p23.
- Amphithalamos, §85, p73.
- Amphitheatres, Roman, §85, p114.
- Amphitheatrum Flavium, §85, p114.
- Amsterdam, Plan of Town Hall, §88, p140.
- Andronitis, §85, p72.
- Andro-Sphinx, §85, p20.
- Annulets, §85, p77.
- Ant e, §85, p81.
- Antefixæ, §85, p81.
- Anthemion, §85, p92.
- Antwerp Cathedral, §87, p82.
Cathedral, Plan of, §87, p84.
- Apollo, Temple of, §85, p123.
- Arab secular and religious buildings, §86, p35.
- Arc de Triomphe du Carrousel, Paris, §88, p102.
- Arch, Drop, §87, p136.
- Arched-roof construction, Roman, §85, p99.
system, §85, p4.
- Arches, Roman triumphal, §85, p116.
- Architecture, Byzantine, §86, p1.
Characteristics of Byzantine, §86, p1.
Characteristics of Egyptian, §85, p10.
Characteristics of Greek, §85, p53.
Characteristics of Persian, §85, p44.
Characteristics of Roman, §85, p99.
Characteristics of Romanesque, §86, p58.
Characteristics of West Asiatic, §85, p35.
Definition of, §85, p1.
Details of buildings of Norman, §86, p129.
Development and characteristics of, §86, p58.
Doorways in Norman, §86, p132.
Early Christian, §85, p136.
Egyptian, §85, p4.
Florentine Renaissance, §88, p14.
Gothic, §87, p1.
Greek, §85, p49.
Indo-Mohammedan, §86, p36.
Mohammedan, §86, p32.
National characteristics of, §85, p2.
Oriental and Grecian influences on the Byzantine, §86, p7.
Origin and development of Renaissance, §88, p1.

- Architecture—(Continued)
 Persian, §85, p42.
 Pyramidal and columnar, §85, p10.
 Renaissance, §88, p1.
 Roman, §85, p93.
 Romanesque, §86, p58.
 Venetian, §88, p39.
 West Asiatic, §85, p30.
 Architrave, §85, p55.
 Archivolts, §86, p83.
 Arch of Caligula, §85, p123.
 of Constantine, Rome, §85, p116.
 Ogee, §87, p136.
 Arena, §85, p114.
 Arles, St. Trophime, §86, p74.
 Arrises, §85, p10.
 Art, Florentine, §88, p7.
 Roman, §88, p7.
 Venetian, §88, p9.
 Veronese, §88, p9.
 Assyria, Babylonia and, §85, p30.
 Assyrian buildings, Details of, §85, p38.
 Athens, Acropolis, §85, p63.
 Plan of Acropolis, §85, p57.
 Atmeidan, §86, p3.
 Atrium, §85, p124.
 Augustæum, §86, p3.
 Austria, Notes on Germany and, §88, p119.
 Austrian Renaissance architecture, Examples of
 German and, §88, p123.
 Renaissance architecture, German and, §88, p119.
 Renaissance, Baroque period of German and,
 §88, p122.
 Renaissance buildings, Details of German and,
 §88, p131.
 Renaissance, Classic revival of German and,
 §88, p122.
 Renaissance, Early period of German and, §88,
 p121.
 Renaissance, Periods of German and, §88, p121.
- B**
- Babylonia and Assyria, §85, p30.
 Babylonian and Assyrian buildings, Details of,
 §85, p38.
 Ballium, §87, p164.
 Baptisteries, Roman, §85, p143.
 Baptistry at Pisa, Plan of, §86, p116.
 Pisa, §86, p109.
 Barbican, §87, p164.
 Barcelona, Church of Sta. Maria del Pi, §87,
 p100.
 Plan of St. Maria del Pi, §87, p102.
 Baroque, §88, p8.
 period of Italian Renaissance, §88, p14.
 Barrel vault, §85, p100.
 Bar-tracery, §87, p12.
 Basilica of Maxentius, Rome, Plan of, §85, p122.
 of St. Clemente, Rome, Plan of, §85, p140.
 of St. Peter, Rome, Plan of, §85, p140.
 Basilicas and baptisteries, Early Christian, §85,
 p137.
 Roman, §85, p120.
 Basket capitals, §86, p22.
 Baths of Caracalla, §85, p107.
 of Caracalla, Rome, Plan of, §85, p108.
 Roman public, §85, p107.
 Bead ornament, Greek, §85, p76.
 Bee-hive caves, §85, p2.
 Béguinage Church, Brussels, §88, p135.
 Belfry, Bruges, §87, p85.
 Belgian and Dutch Renaissance, §88, p134.
 and Dutch Renaissance architecture, Examples
 of, §88, p135.
 and Dutch Renaissance buildings, Details of,
 §88, p134.
 Gothic architectural examples, §87, p79.
 Gothic architectural periods, §87, p78.
 Gothic architecture, §87, p75.
 Gothic buildings, Details of, §87, p89.
 Gothic columns, §87, p94.
 Gothic periods, Characteristics of the principal,
 §87, p79.
 Gothic periods of development, §87, p78.
 Belgium and Holland, Notes on, §88, p134.
 Notes on, §87, p75.
 Bell Tower, Evesham, §87, p161.
 Billet moulding, §86, p133.
 Blenheim Palace, §88, p171.
 Palace, Plan of, §88, p176.
 Blois, Château de, §87, p174.
 Bodiam Castle, Sussex, §87, p171.
 Bonn Cathedral, §86, p94.
 Bordeaux, St. Croix, §86, p77.
 Bosses, §87, p150.
 Boston, Public Library, §88, p205.
 Trinity Church, §88, p204.
 Bourges Cathedral, §87, p18.
 House of Jacques Coeur, §87, p190.
 Bowtel, §86, p132.
 Pear-shaped, §87, p148.
 Bramshill house, Hampshire, §88, p155.
 Branch tracery, §87, p55.
 Bridges and aqueducts, Roman, §85, p119.
 Brucksal Palace, §88, p127.
 Bruges belfry, §87, p85.
 Hôtel de Ville, §87, p85.
 Brunswick, Rathaus, §87, p52.
 Brussels Cathedral, §87, p82.
 Cathedral, Plan of, §87, p82.
 Hôtel de Ville, §87, p88.
 Palais de Justice, §88, p200.
 Plan of Palais de Justice, §88, p199.

Buildings, Details of Greek, §85, p74.
 Details of Italian Renaissance, §88, p55.
 Details of Persian, §85, p47.
 Details of Roman, §85, p126.
 Burgos Cathedral, §87, p99.
 Cathedral, Plan of, §87, p100.
 Buttresses, §86, p61.
 Buttress, Flying, §86, p61.
 Byzantine architecture, §86, p1.
 architecture, Characteristics of the, §86, p7.
 architecture, Oriental and Grecian influences on
 the, §86, p7.
 buildings, Details of, §86, p18.
 dome construction, §86, p8.
 Empire, Notes on, §86, p1.
 ornament, §86, p22.

C

Cable moulding, §86, p133.
 Caen, Abbaye-aux-Hommes, §86, p78.
 Plan of Abbaye-aux-Hommes, §86, p80.
 Cairo, Mosque of Kaid Bey, §86, p36.
 Caius College, Cambridge, Gate of honour, §88, p160.
 Cambridge, Fitzwilliam Museum, §88, p180.
 Campanile, Florence, §87, p66.
 Campo Santo, Pisa, §86, p105.
 Canterbury Cathedral, §87, p123.
 Cathedral, Plan of, §87, p126.
 Capital, Cushion, §86, p131.
 Capitals, Basket, §86, p22.
 Hathor-headed, §85, p23.
 Caprarola, Palace of, §88, p36.
 Caracalla, Baths of, §85, p107.
 Carcassonne, §87, p174.
 Carceres, §85, p115.
 Castle, Hohensalzburg, §87, p172.
 Howard, §88, p172.
 Howard, Plan of, §88, p178.
 Kenilworth, §87, p167.
 of Coucy, Plan of, §87, p165.
 of Heidelberg, §88, p123.
 Warwick, §87, p167.
 Castles, Gothic, §87, p164.
 Cathedral, Amiens, §87, p23.
 Antwerp, §87, p82.
 Bonn, §86, p94.
 Bourges, §87, p18.
 Brussels, §87, p82.
 Burgos, §87, p99.
 Canterbury, §87, p123.
 Chartres, §87, p21.
 Cologne, §87, p49.
 Ely, §87, p126.
 Florence, §87, p63.
 Lichfield, §87, p121.
 London, St. Paul's, §88, p169.
 Cathedral—(Continued)
 Milan, §87, p62.
 of Monreale, §86, p112.
 of Pisa, §86, p105.
 of St. Gregorie, Spain, §87, p100.
 Peterborough, §86, p124 ; §87, p119.
 Ratisbon, §87, p50.
 Rheims, §87, p21.
 Salisbury, §87, p120.
 Segovia, §87, p102.
 Siena, §87, p66.
 Speyer, §86, p92.
 Toledo, §87, p99.
 Tournai, §87, p79.
 Ulm, §87, p50.
 Wells, §87, p128.
 Winchester, §86, p128 ; §87, p123.
 Worms, §86, p92.
 Cathedrals, Principal features of Gothic, §87, p5.
 Cavetto, §85, pp11, 75.
 Central Italian Romanesque, §86, p105.
 Chambers and Adam brothers, William, §88,
 p154.
 Characteristics of Egyptian architecture, §85, p10.
 of Persian architecture, §85, p44.
 of Roman architecture, §85, p99.
 Chartres Cathedral, §87, p21.
 Cathedral, Plan of, §87, p18.
 Château d' Agay-le-Rideau, §88, p80.
 de Blois, §87, p174 ; §88, p72.
 de Blois, Plan of, §88, p72.
 de Chambord, §88, p80.
 de Chambord, Plan of, §88, p78.
 de Chenonceaux, §88, p78.
 de Fontaine Henri, §87, p171.
 de Nacqueville, §87, p172.
 de Pierrefonds, §87, p171.
 Chelsea Hospital, London, §88, p166.
 Cheops, Great pyramid at, §85, p12.
 Pyramid at, §85, p12.
 Chevrons, §86, pp83, 133.
 Choragic Monument of Lysicrates, §85, p68.
 Chorus, §85, p138.
 Christian architecture, Early, §85, p136.
 basilicas and baptisteries, Early, §85, p137.
 Church at Iffley, §86, p129.
 Brussels, Béguinage, §88, p135.
 of Hagia Sophia, §86, p3.
 of Holy Apostles, Cologne, §86, p92.
 of St. Etienne du Mont, §88, p81.
 of St. Vitale, §86, p15.
 of Sorbonne, Paris, §88, p89.
 Churches, Conversion of Roman buildings into,
 §85, p137.
 Ciborium, §85, p139.
 Cimborio, §87, p98.
 Cinctules, §88, p55.

Circuses, Roman, §85, p115.
 Circus of Romulus, Rome, Plan of, §85, p115.
 City Gate, Munich, §88, p129.
 gates, Gothic, §87, p174.
 Classic period of French Renaissance, §88, p71.
 revival of French Renaissance, §88, p71.
 Classification of Greek styles, §85, p4.
 of Italian Renaissance periods, §88, p11.
 Clerestory, §85, p18.
 Climatic influences on architecture, §85, p3.
 Cloth Hall, Ypres, §87, p88.
 Cologne Cathedral, §87, p49.
 Cathedral, Plan of, §87, p49.
 Church of Holy Apostles, §86, p92.
 Plan of Church of Holy Apostles, §86, p88.
 Column, §85, p55.
 Trajan's, §85, p117.
 Columns, English Renaissance, §88, p187.
 French Romanesque, §86, p82.
 German Romanesque, §86, p96.
 Mohammedan, §86, p46.
 Roman, §85, p130.
 Roman monumental, §85, p117.
 Combinations of orders, Greek, §85, p101.
 Comitium, §85, p103.
 Compluvium, §85, p124.
 Composite order, §85, p101.
 Orders, Proportions of Roman Corinthian and, §85, p135.
 Constantine, Rome, Arch of, §85, p116.
 Constantinople, Plan of St. Sophia, §86, p10.
 Santa Sophia, §86, p12.
 Construction, Roman dome, §85, p100.
 Continental architecture, Recent, §88, p198.
 buildings, Some prominent, §88, p198.
 Cordova, Mosque at, §86, p36.
 Plan of Mosque at, §86, p38.
 Corinthian, and Composite orders, Proportions of Roman, §85, p135.
 order, §85, pp55, 84.
 Cornaro Palace, Venice, §88, p42.
 Cornice, §85, p55.
 Corona, §85, p79.
 Cortile of Cancellaria Palace, Rome, §88, p24.
 Cottesmore Church, Rutland, §87, p160.
 Cremona, Palazzo Pubblico, §87, p71.
 Cresting, §87, p149.
 Crio-Sphinx, §85, p20.
 Crockets, §87, p148.
 Cromlechs, §85, p2.
 Cuneiform writing, §85, p30.
 Cushion capital, §86, p131.
 Cyclopean, §85, p61.
 Cyma-recta, §85, p76.
 -reversa, §85, p76.
 Cymatium, §85, pp76, 91.

D

Decastyle, §85, p59.
 Delhi, Tower of Kutab, §86, p42.
 Details of Greek buildings, §85, p74.
 of Greek orders, §85, p87.
 of Italian Renaissance buildings, §88, p54.
 of Persian buildings, §85, p47.
 of Roman buildings, §85, p126.
 of Roman orders, §85, p130.
 Development and Characteristics of Romanesque architecture, §86, p58.
 Developments of principal styles, §85, p1.
 Diaper, §85, p27.
 Diwans and harems, §86, p86.
 Doges' Palace, Venice, §87, p71.
 Dog-tooth ornament, §87, p148.
 Dolmens, §85, p2.
 Dome construction, Byzantine, §86, p8.
 construction, Roman, §85, p100.
 des Invalides, Paris, §88, p91.
 Domitian, Palace of, §85, p121.
 Domus, §85, p122.
 Doric order, §85, pp55, 77.
 order, Proportions of Roman, §85, p132.
 Dresden, Zwinger, §88, p127.
 Ducal Palace, Venice, §88, p42.
 Dutch Renaissance architecture, Examples of
 Belgian and, §88, p135.
 Renaissance, Belgian and, §88, p134.
 Renaissance buildings, Details of Belgian and, §88, p141.

E

Early Christian architecture, §85, p136.
 Christian basilicas and baptisteries, §85, p137.
 English Renaissance buildings, §88, p155.
 Period of French Renaissance, §88, p70.
 Period of Italian Renaissance, §88, p11.
 Echinus, §85, pp55, 77.
 Egyptian architecture, §85, p4.
 architecture, Characteristics of, §85, p10.
 architecture, Examples of, §85, p11.
 architecture, Principal features of, §85, p10.
 buildings, Details of, §85, p21.
 ornamentations, §85, p25.
 sphinxes and colossal statues, §85, p20.
 temples, §85, p15.
 wall and ceiling decoration, §85, p26.
 Egypt, Notes on, §85, p4.
 Religion of, §85, p7.
 Ely Cathedral, §87, p126.
 Cathedral, Galilee of, §87, p126.
 Cathedral, Plan of, §87, p128.
 England, Notes on, §86, p118 ; §87, p105 ; §88, p147.
 English architecture, Recent, §88, p194.
 Classic Renaissance and its founders, §88, p151.

English—(Continued)

- Classic Renaissance buildings, §88, p160.
- experiments in Gothic architecture, §88, p194.
- Gothic arcades, §87, p135.
- Gothic architecture, §87, p105.
- Gothic architecture, Examples of, §87, p119.
- Gothic architecture, Main features of the perpendicular style in, §87, p109.
- Gothic architectural periods, §87, p106.
- Gothic architecture, Timber roofs in, §87, p115.
- Gothic architecture, Vaulting of, §87, p109.
- Gothic buildings, Details of, §87, p129.
- Gothic buildings Walls of, §87, p131.
- Gothic buttresses, §87, p134.
- Gothic capitals, §87, p137.
- Gothic column bases, §87, p139.
- Gothic decorated period, §87, p107.
- Gothic doorways, §87, p144.
- Gothic Lancet, Decorated, and Perpendicular styles, §87, p108.
- Gothic mouldings, §87, p147.
- Gothic, Ornamentation of, §87, p148.
- Gothic parish churches, Towers of, §87, p156.
- Gothic periods, Duration of, §87, p107.
- Gothic spires, §87, p160.
- Gothic transitional period, §87, p106.
- Gothic windows, §87, p140.
- public buildings and mansions, Style of, §88, p151.
- Renaissance architecture, §88 p147.
- Renaissance architecture, Examples of, §88, p155.
- Renaissance architecture, Periods of, §88, p149.
- Renaissance architecture, Revival of Greek style in, §88, p154.
- Renaissance buildings, Details of, §88, p184.
- Renaissance buildings, Early, §88, p155.
- Renaissance columns, §88, p187.
- Renaissance, Early, §88, p149.
- Renaissance house decoration, §88, p150.
- Renaissance houses, Plans of, §88, p150.
- Renaissance ornamentation, §88, p189.
- Renaissance revival, §88, p198.
- Romanesque or Norman architecture, §86, p118.
- Entablature, §85, p55.
- Entasis, §85, pp55, 131.
- Eretheum, §85, pp56, 67.
- Escorial Palace, Madrid, §88, p143.
- Palace, Madrid, Plan of, §88, p145.
- European Gothic secular architecture, §87, p162.
- Evesham, Bell Tower, §87, p161.
- Examples of Greek architecture, §85, p60.
- of Roman architecture, §85, p101.
- Exedra, §85, pp125, 126.

F

- Farnese Palace, Rome, §88, p24.
- Palace, Rome, Plan of, §88, p24.

- Fasciae, §85, p83.
- Fauces, §85, p125.
- Fillet, §85, p75.
- Finial, §87, p149.
- Fireproof construction, Romanesque, §86, p61.
- Fitzwilliam Museum, Cambridge, §88, p180.
- Flavium, Amphitheatrum, §85, p114.
- Fleche, §87, p23.
- Florence, Campanile, §87, p66.
- Cathedral, §87, p63.
- Cathedral, Plan of, §87, p63.
- Palazzo Necchio, §88, p21.
- Pandolfini Palace, §88, p20.
- Pitti Palace, §88, p15.
- Plan of Riccardi Palace, §88, p14.
- Plan of St. Spirito, §88, p15.
- Plan of Strozzi Palace, §88, p19.
- St. Spirito, §88, p15.
- Santa Croce, §87, p66.
- Strozzi Palace, §88, p18.
- Florentine art, §88, p7.
- Renaissance architecture, §88, p14.
- Flutes, §85, p55.
- Flying buttress, §86, p61.
- Fontaine Henri, Château de, §87, p171.
- Fortuna Virilis, Temple of, §88, p103.
- Fortune, Temple of, §85, p123.
- Forum, §85, p102.
- France, Château de Pierrefonds, §87, p171.
- Notes on, §86, p66 ; §87, p8 ; §88, p67.
- French and English Gothic architecture, Contemporaneous, §87, p108.
- Gothic architectural periods, §87, p10.
- Gothic architecture, §87, p8.
- Gothic architecture, Classification of periods of, §87, p10.
- Gothic architecture, Details of buildings in, §87, p28.
- Gothic architecture, Early Pointed period of, §87, p10.
- Gothic architecture, Examples of, §87, p12.
- Gothic architecture, Late Pointed period of, §87, p12.
- Gothic architecture, Middle Pointed period of, §87, p12.
- Gothic architecture, Transition period of, §87, p10.
- Gothic ornamentation, §87, p39.
- Renaissance, §88, p67.
- Renaissance, Architectural examples of, §88, p72.
- Renaissance, Architectural periods of, §88, p69.
- Renaissance buildings, Details of, §88, p109.
- Renaissance, Classic period of, §88, p71.
- Renaissance, Classic revival of, §88, p71.
- Renaissance, Early period of, §88, p70.
- Renaissance mouldings, §88, p115.
- Renaissance ornamentation, §88, p117.

French—(Continued)

- Renaissance periods, §88, p69.
- Renaissance periods, Classification of, §88, p69.
- Renaissance periods, Distinctive features of, §88, p69.
- Renaissance, Rococo period of, §88, p71.
- Romanesque, Architectural examples of, §86, p70.
- Romanesque architecture, §86, p66.
- Romanesque buildings, Detail of, §86, p80.
- Romanesque columns, §86, p82.
- Romanesque, Distinctive features of, §86, p70.
- Romanesque ecclesiastical buildings, §86, p74.
- Romanesque ornamentation, §86, p82.
- Frieze, §85, p55.
- Frigidarium, §85, p108.

G

- Galilee of Ely Cathedral, §87, p126.
- Gate of Honour, Caius College, Cambridge, §88, p160.
- German and Austrian Renaissance architecture, §88, p119.
- and Austrian Renaissance architecture, Details of buildings in, §88, p131.
- and Austrian Renaissance architecture, Examples of, §88, p123.
- and Austrian Renaissance, Baroque period of, §88, p122.
- and Austrian Renaissance, Classic revival of, §88, p122.
- and Austrian Renaissance, Early period of, §88, p121.
- and Austrian Renaissance periods, §88, p121.
- and Austrian Renaissance, Undeveloped Classic period of, §88, p122.
- Gothic architectural examples, §87, p49.
- Gothic architectural periods, §87, p47.
- Gothic architecture, §87, p44.
- Gothic architecture, Foreign influence in, §87, p48.
- Gothic buildings, Details of, §87, p52.
- Gothic cathedrals and civic buildings, §87, p49.
- Gothic columns, §87, p55.
- Gothic ornamentation, §87, p55.
- Romanesque, Architectural examples of, §86, p88.
- Romanesque architecture, §86, p84.
- Romanesque architecture, Distinctive features of, §86, p88.
- Romanesque columns, §86, p96.
- Romanesque details of buildings, §86, p94.
- Romanesque mouldings, §86, p97.
- Romanesque ornamentation, §86, p97.
- Germany and Austria, Notes on, §88, p119.
- Notes on, §86, p84; §87, p44.
- Giraud Palace, Rome, §88, p24.
- Gizeh, Pyramids at, §85, p11.
- Glyphs, §85, p78.
- Glyptothek, Munich, §88, p129.
- Gothic arcades, §87, p135.
- architectural examples, Belgian, §87, p79.
- architectural examples, German, §87, p49.
- architectural examples, Italian, §87, p61.
- architectural examples, Spanish, §87, p94.
- architectural periods, Belgian, §87, p78.
- architectural periods, English, §87, p106.
- architectural periods, French, §87, p10.
- architectural periods, German, §87, p47.
- architecture, §87, p1.
- architecture, Beginning of, §87, p2.
- architecture, Belgian, §87, p75.
- architecture, Characteristics of Italian, §87, p61.
- architecture, Classification of periods of French, §87, p10.
- architecture, Contemporaneous French and English, §87, p108.
- architecture, Details of buildings in French, §87, p28.
- architecture, Early Pointed period of French, §87, p10.
- architecture, Early Spanish, §87, p97.
- architecture, English, §87, p105.
- architecture, English experiments in, §88, p194.
- architecture, Example of French, §87, p12.
- architecture, Examples of English, §87, p119.
- architecture, Foreign influence in German, §87, p48.
- architecture, French, §87, p8.
- architecture, German, §87, p44.
- architecture, Introduction of pointed arches in, §87, p4.
- architecture, Italian, §87, p50.
- architecture, Late Pointed period of French, §87, p12.
- architecture, Main features of the Perpendicular style in English, §87, p109.
- architecture, Middle Pointed period of French, §87, p12.
- architecture, National influences on, §87, p1.
- architecture, Norman influences affecting, §87, p163.
- architecture, Origin and development of, §87, p1.
- architecture, Spanish, §87, p94.
- architecture, Timber roofs in English, §87, p115.
- architecture, Transition period of French, §87, p10.
- architecture, Vaulting of English, §87, p109.
- buildings, Details of Belgian, §87, p89.
- buildings, Details of English, §87, p129.
- buildings, Details of German, §87, p52.
- buildings, Details of Italian, §87, p71.
- buildings, Details of Spanish, §87, p102.
- buildings, Walls of English, §87, p131.

Gothic—(Continued)

buttresses, English, §87, p134.
 capitals, English, §87, p137.
 castles, §87, p164.
 cathedrals and churches, Spanish, §87, p99.
 cathedrals and civic buildings, German, §87, p49.
 cathedrals and palaces, Italian, §87, p61.
 cathedrals, Principal features of, §87, p5.
 city gates, §87, p174.
 column bases, English, §87, p139.
 columns, Belgian, §87, p94.
 columns, German, §87, p55.
 columns, Italian, §87, p72.
 country mansions, §87, p166.
 Decorated period, English, §87, p107.
 doorways, English, §87, p144.
 Duration of English, §87, p107.
 dwellings, Interior furnishings of, §87, p163.
 fortified structures, §87, p167.
 Lancet, Decorated, and Perpendicular styles, English, §87, p108.
 mouldings, English, §87, p147.
 ornamentation, English, §87, p148.
 ornamentation, French, §87, p39.
 ornamentation, German, §87, p55.
 ornamentation, Italian, §87, p72.
 parish churches, Towers of English, §87, p156.
 period, Early, §87, p47.
 periods, Characteristics of the principal Belgian, §87, p79.
 periods, Middle and Florid, §87, p47.
 periods of developments, Belgian, §87, p78.
 secular architecture, §87, p162.
 secular architecture, European, §87, p162.
 smaller dwelling houses, §87, p191.
 spires, English, §87, p160.
 thirteenth-century dwellings, §87, p163.
 transitional period, English, §87, p106.
 windows, English, §87, p140.
 Granada, Alhambra, §86, p38.
 Greece, Cities of, §85, p56.
 Notes on, §85, p49.
 Temples of, §85, p58.
 Greek architecture, §85, p49.
 architecture, Characteristics of, §85, p53.
 architecture, Examples of, §85, p60.
 buildings, Details of, §85, p74.
 combinations of orders, §85, p101.
 house, Plan of, §85, p73.
 orders, §85, pp53, 77.
 orders, Roman alterations in, §85, p136.
 ornamentation, §85, p90.
 theatre, Plan of, §85, p72.
 theatres, houses, and tombs, §85, p71.
 Griffes, §86, p98.
 Growth of the Renaissance, §88, p2.
 Guilloche, §85, p93.

Guttæ, §85, p78.
 Gynaikonitis, §85, p72.

H

Haarlem, Market at, §88, p139.
 Hagia Sophia, Church of, §86, p3.
 Hallenkirchen type, §87, p48.
 Harems, Diwans and, §86, p36.
 Hatched moulding, §86, p133.
 Hawk's-beak, §85, p76.
 Heidelberg, Castle of, §88, p123.
 Hexastyle, §85, p59.
 Hieraco-Sphinx, §85, p20.
 Hildesheim, Kaiserhaus at, §88, p123.
 Hippodrome, §86, p3.
 Hohensalzburg Castle, §87, p172.
 Holland, Notes on Belgium and, §88, p134.
 Holy Apostles', Cologne, Plan of Church of, §86, p86.
 Hôtel de Ville, Bruges, §87, p85.
 de Ville, Brussels, §87, p88.
 de Ville, Louvain, §87, p88.
 de Ville, Seville, §88, p143.
 House of Pansa, Pompeii, Plan of, §85, p125.
 Houses, Pompeian, §85, p124.
 Roman, §85, pp101, 122.
 Howard, Castle, §88, p172.
 Plan of Castle, §88, p178.
 Hunting Lodge of Francis I, §88, p81.
 Hypocaust floor, §85, p110.
 Hypæthral, §85, p75.
 Hypostyle hall, §85, p18.
 Hypotrachelium, §85, p84.

I

Iffley Church, §86, p129.
 Impluvium, §85, p124.
 Imposts, §86, p132.
 India, Mosques and monuments in, §86, p42.
 Indo-Mohammedan architecture, §86, p36.
 Insula, §85, p122.
 Intarsia, §88, p65.
 Intercolumniations, §85, p78.
 Interior furnishings of Gothic dwellings, §87, p163.
 Invalides, Paris, Plan of Dome des, §88, p89.
 Ionic order, §85, pp55, 81.
 order, Proportions of Roman, §85, p135.
 Italian Gothic architectural examples, §87, p61.
 Gothic architecture, §87, p59.
 Gothic architecture, Characteristics of, §87, p61.
 Gothic buildings, Details of, §87, p71.
 Gothic cathedrals and palaces, §87, p61.
 Gothic columns, §87, p72.
 Gothic ornamentation, §87, p72.
 Renaissance, §88, p4.
 Renaissance, Architectural examples of, §88, p14.

Italian—(Continued)

- Renaissance, Architectural periods of, §88, p11.
- Renaissance, Baroque period of, §88, p14.
- Renaissance buildings, Details of, §88, p54.
- Renaissance, Early period of, §88, p11.
- Renaissance, Middle period of, §88, p12.
- Renaissance ornamentation, §88, p59.
- Renaissance periods, Classification of, §88, p11.
- Renaissance, Rococo period of, §88, p14.
- Romanesque, Architectural features of Southern, §86, p112.
- Romanesque architecture, §86, p100.
- Romanesque architecture, Distinctive features of, §86, p105.
- Romanesque architecture, Examples of Central, §86, p105.
- Romanesque, Central, §86, p105.
- Romanesque, Columns of, §86, p117.
- Romanesque, Details of, §86, p116.
- Romanesque, Distinctive features of Northern, §86, p163.
- Romanesque, Examples of Northern, §86, p103.
- Romanesque, Examples of Southern, §86, p112.
- Romanesque, Northern, §86, p103.
- Romanesque, Ornamentation of, §86, p117.
- Romanesque, Southern, §86, p112.
- Italy, Notes on, §86, p100 ; §87, p59 ; §88, p4.
- Lindsay House, London, §88, p162.
- Liverpool, St. George's Hall, §88, p181.
- London, Chelsea Hospital, §88, p166.
- Design for Whitehall Palace, §88, p163.
- House in the Adelphi, §88, p179.
- Houses of Parliament, §88, p198.
- Lindsay House, §88, p162.
- Original Plan of St. Paul's Cathedral, §88, p169.
- Plan of St. Martin-in-the-Fields, §88, p180.
- Plan of St. Martin, Ludgate Hill, §88, p165.
- Plan of St. Mary Abchurch, §88, p165.
- Plan of St. Mary-le-Bow, §88, p165.
- Plan of St. Paul's Cathedral, §88, p171.
- Proposed plan of Whitehall Palace, §88, p164.
- Royal Exchange, §88, p183.
- St. John, Westminster, §88, p173.
- St. Martin-in-the-Fields, §88, p173.
- Somerset House, §88, p176.
- Lotus, §85, p25.
- Louvain, Hôtel de Ville, §87, p88.
- Louvre, Modern additions to the, §88, p109.
- Paris, §88, p85.
- Paris, Plan of, §88, p85.
- Lucarnes, §88, p91.
- Lysicrates, Choragic Monument of, §85, p68.

M

- J
- Jacques Coeur, Bourges, House of, §87, p190.
- Jones, Inigo, §88, p151.
- Jove, Temple of, §85, p123.
- Jupiter Tonans, Temple of, §85, p103.
- K
- Kaid Bey, Mosque of, §86, p36.
- Kaiserhaus at Hildesheim, §88, p123.
- Karls Kirche, Vienna, §88, p128.
- Kirche, Vienna, Plan of, §88, p129.
- Karnak, Hypostyle Hall, §85, p17.
- Kathisma, §86, p3.
- Kenilworth Castle, §87, p167.
- Castle, Plan of, §87, p165.
- Kirby Hall, Northamptonshire, §88, p156.
- L
- Laconicum, §85, p110.
- Library, Boston, Public, §88, p205.
- of Columbia University, New York, §88, p210.
- of Congress, Washington, §88, p210.
- of St. Mark, Venice, §88, p43.
- Lichfield Cathedral, §87, p121.
- Cathedral, Plan of, §87, p123.
- Liege, Church of St. Jacques, §87, p84.
- Plan of St. Jacques, §87, p88.
- Macellum, §85, p123.
- Machioliations, §87, p164.
- Madeleine, Paris, §88, p103.
- Madrid, Plan of Escorial Palace, §88, p145.
- Mantua, Plan of St. Andrea, §88, p18.
- St. Andrea, §88, p18.
- Marcellus, Theatre of, §85, p112.
- Market at Haarlem, §88, p139.
- Mars Ultor, Temple of, §85, p103.
- Mastabas and other tombs, §85, p14.
- Mercury, Temple of, §85, p123.
- Merlons, §87, p152.
- Mesaulos, §85, p73.
- Metopes, §85, pp55, 78.
- Middle period of Italian Renaissance, §88, p12.
- Milan Cathedral, §87, p62.
- Cathedral, Plan of, §87, p61.
- Minarets, §86, p35.
- Minster, York, §87, p128.
- Mint, Venice, The, §88, p43.
- Mohammedan architecture, §86, p32.
- architecture, External Influences on, §86, p34.
- buildings, Details of, §86, p42.
- columns, §86, p46.
- mouldings, §86, p48.
- ornamentation, §86, p48.
- Monoliths, §85, p2.
- Monreale, Cathedral, §86, p112.
- Cathedral of, §86, p112.

Mont St. Michel, Normandy, Abbey of, §87, p27.
 Monumental columns, Roman, §85, p117.
 Monument of Lysicrates, Choragic, §85, p68.
 Monuments, Roman, §85, p101.
 Moorish Art, §87, p96.
 Moresco style, §87, p98.
 Mosque and mausoleum at Agra, §86, p42.
 at Cordova, §86, p38.
 of Akbar, §86, p42.
 of Kaid Bey, §86, p36.
 Mosques and monuments in India, §86, p42.
 Moulding, Billet, §86, p133.
 Cable, §68, p133.
 Hatched, §86, p133.
 Nail-head, §86, p133.
 Mouldings, Mohammedan, §86, p48.
 Norman, §86, p1.
 Munich, City gate, §88, p129.
 Glyptothek, §88, p129.
 Ruhmeshalle, §88, p129.
 Münster, Town Hall of, §87, p52.
 Mutules, §85, p79.
 Mycenæ, §85, p62.

N

Nacqueville, Château de, §87, p172.
 Nail-head moulding, §86, p133.
 -head ornament, §86, p100.
 Nancy, Palace of the Dukes, §87, p175.
 Narthex, §85, p138.
 Natateo, §85, p108.
 National characteristics of architecture, §85, p2.
 Necking, §85, p77.
 New York, Library of Columbia University, §88, p210.
 Madison Square Garden, §88, p206.
 Woolworth Building, §88, p207.
 Nîmes, France, Roman Corinthian temple at, §85, p103.
 Norman architecture, Characteristics of, §86, p123.
 architecture, Details of buildings of, §86, p129.
 architecture, Doorways in, §86, p132.
 architecture, English Romanesque or, §86, p118.
 architecture, Examples of, §86, p123.
 architecture, Windows in, §86, p131.
 influences affecting Gothic architecture, §87, p163.
 mouldings, §86, p132.
 ornamentation, §86, p133.
 Notre Dame la Grande, Church of, §86, p78.
 Dame, Paris, §87, p12.
 Dame, Paris, Plan of, §87, p12.

O

Obelisks, §85, p19.
 Octastyle, §85, p59.
 Ogee arch, §87, p136.

Old Rathaus, Vienna, Doorway of, §88, p128.
 Opera House, Paris, §88, p109.
 Order, §85, p55.
 Composite, §85, p101.
 Corinthian, §85, pp55, 84.
 Doric, §85, pp55, 77.
 Ionic, §85, pp55, 87.
 Proportions of Roman Doric, §85, p132.
 Proportions of Roman Ionic, §85, p135.
 Proportions of Tuscan, §85, p131.
 Tuscan, §85, p101.
 Orders, Details of Roman, §85, p130.
 Greek, §85, pp53, 77.
 Greek combination of, §85, p101.
 Proportions of Roman, §85, p130.
 Proportions of Roman Corinthian and Composite, §85, p135.
 Roman alteration in Greek, §85, p136.
 Ornamentation, Greek, §85, p90.
 Italian Renaissance, §88, p59.
 Norman, §86, p133.
 Roman, §85, p136.
 Ornamentations, Egyptian, §85, p25.
 of the Renaissance period, §88, p59.
 Ornament, Byzantine, §86, p22.
 Mohammedan, §86, p48.
 Osiride pillars, §85, p24.
 Ostium, §85, p124.
 Outwell Church, Norfolk, Plan of, §87, p157.
 Ovolo, §85, p76.
 Oxford, Plan of Radcliffe Library, §88, p181.
 Radcliffe Library, §88, p176.
 Tower of the Schools, §88, p158.

P

Palace, Blenheim, §88, p171.
 Brucksal, §88, p127.
 Florence, Riccardi, §88, p14.
 Madrid, Escorial, §88, p143.
 of Capraola, Rome, §83, p36.
 of Capraola, Rome, Plan of, §88, p36.
 of the Doges, Venice, §87, p71.
 of the Dukes, Nancy, §87, p175.
 of Versailles, Plan of, §88, p96.
 Versailles, §88, p96.
 Palaces and tombs, Persian, §85, p45.
 Roman, §85, p121.
 Venetian, §87, p189.
 Palais de Justice, Brussels, §88, p200.
 de Justice, Rouen, §87, p28.
 Palazzo del Consiglio, Venice, §88, p47.
 Pubblico, Cremona, §87, p71.
 Vecchio, Florence, §88, p21.
 Palladio's works, §88, p9.
 Palm, Egyptian, §85, p25.
 Pandolfini Palace, Florence, §88, p20.

- Panthéon, Paris, §88, p91.
 Paris, Plan of, §88, p92.
 Rome, Plan of, §85, p108.
 Papyrus, §85, p25.
- Paris, Arc de Triomphe du Carrousel, §88, p102.
 Church of Sorbonne, §88, p89.
 Dome des Invalides, §88, p91.
 Louvre, §88, p85.
 Madeleine, §88, p103.
 Notre Dame, §87, p12.
 Opera House, §88, p109.
 Panthéon, §88, p91.
 Plan of Dome des Invalides, §88, p89.
 Plan of Louvre, §88, p85.
 Plan of Notre Dame, §87, p12.
 Plan of Panthéon, §88, p92.
 Plan of Sainte Chapelle, §87, p26.
 St. Chapelle, §87, p24.
 St. Sulpice, §88, p92.
- Parliament House, Vienna, §88, p130.
 London, Houses of, §88, p198.
- Parthenon, §85, p65.
- Paschal, §85, p138.
- Pateræ, §88, p65.
- Pavia, Church of San Michele, §86, p103.
 San Michele, §86, p103.
- Pear-shaped bowtel, §87, p148.
- Pediment, §85, p75.
- Penacothecæ, §85, p126.
- Pendentives, §86, p8.
 Stalactite, §86, p36.
- Peperino, §85, p122.
- Peribolus, §85, p108.
- Perigieux, Plan of St. Front, §86, p74.
 St. Front, §86, p75.
- Peristyle, §85, p125.
- Peristylon, §85, p73.
- Persian architecture, §85, p42.
 architecture, Characteristics of, §85, p44.
 architecture, Examples of, §85, p45.
 buildings, Details of, §85, p47.
 palaces and tombs, §85, p45.
- Persia, Notes on, §85, p42.
- Pesaro Palace, Venice, §88, p45.
- Peterborough Cathedral, §86, p124 ; §87, p119.
 Cathedral, Plan of, §87, p117.
- Petit Trianon, Versailles, §88, p102.
- Philadelphia, Girard College, §88, p204.
- Piazza of St. Mark, Venice, §88, p47.
 of St. Mark, Venice, Plan of, §88, p48.
 of St. Peter's, Rome, Plan of, §88, p32.
- Pierrefonds, Château de, §87, p171.
- Pilaster, §85, p81.
- Pinnacles, §87, p149.
- Pisa, Baptistery at, §86, p109.
 Buildings at, §86, p105.
 Campanile, §86, p109.
- Pisa—(Continued)
 Campanile or Bell Tower, §86, p109.
 Cathedral of, §86, p105.
 Plan of Baptistery, §86, p110.
- Pitti Palace, Florence, §88, p15.
- Plan of Abbaye-aux-Hommes, Caen, §86, p80.
 of Abbey Church of St. Ouen, Rouen, §87, p26
 cf Acropolis, Athens, §85, p57.
 of Amiens Cathedral, §87, p23.
 of Antwerp Cathedral, §87, p84.
 of Baptistery at Pisa, §86, p110.
 of basilica of Maxentius, Rome, §85, p122.
 of basilica of St. Clemente, Rome, §85, p140.
 of basilica of St. Peter, Rome, §85, p140.
 of Baths of Caracalla, Rome, §85, p108.
 of Blenheim Palace, §88, p176.
 of Brussels Cathedral, §87, p82.
 of Burgos Cathedral, §87, p100.
 of Canterbury Cathedral, §87, p126.
 of Castle Howard, §88, p178.
 of Castle of Coucy, §87, p165.
 of Chapel of Versailles, §88, p97.
 of Chartres Cathedral, §87, p18.
 of Château de Blois, §88, p72.
 of Château de Chambord, §88, p78.
 of Church of Holy Apostles, Cologne, §86, p88.
 of Church of St. Jacques, Liege, §87, p88.
 of Circus of Romulus, Rome, §85, p115.
 of Cologne Cathedral, §87, p49.
 of Dome des Invalides, Paris, §88, p89.
 of Ely Cathedral, §87, p128.
 of Escorial Palace, Madrid, §88, p145.
 of Farnese Palace, Rome, §88, p24.
 of Florence Cathedral, §87, p63.
 of Greek house, §85, p73.
 of Greek theatre, §85, p72.
 of House of Pansa, Pompeii, §85, p125.
 of Karls Kirche, Vienna, §88, p129.
 of Kenilworth Castle, §87, p165.
 of Lichfield Cathedral, §87, p123.
 of Louvre, Paris, §88, p85.
 of Milan Cathedral, §87, p61.
 of Mosque at Cordova, §86, p38.
 of Notre Dame, Paris, §87, p12.
 of Outwell Church, Norfolk, §87, p157.
 of Palace of Capraola, Rome, §88, p36.
 of Palace of Versailles, §88, p96.
 of Palais de Justice, Brussels, §88, p199.
 of Panthéon, Paris, §88, p92.
 of Panthéon, Rome, §85, p108.
 of Peterborough Cathedral, §87, p117.
 of Piazza of St. Mark, Venice, §88, p48.
 of Piazza of St. Peter's, Rome, §88, p32.
 of Radcliffe Library, Oxford, §88, p181.
 of Ramesseum, §85, p17.
 of Ratisbon Cathedral, §87, p52.
 of Redentore, Venice, §88, p53.

Plan—(Continued)

- of Rheims Cathedral, §87, p21.
- of Riccardi Palace, Florence, §88, p14.
- of St. Andrea, Mantua, §88, p18.
- of St. Front, Périgueux, §86, p74.
- of St. Maria del Pi, Barcelona, §87, p102.
- of St. Mark's, Venice, §86, p16.
- of St. Martin-in-the-Fields, London, §88, p180.
- of St. Martin, Ludgate Hill, London, §88, p165.
- of St. Mary Abchurch, London, §88, p165.
- of St. Mary-le-Bow, London, §88, p165.
- of St. Paul's Cathedral, London, §88, p171.
- of St. Sophia, Constantinople, §86, p10.
- of St. Spirito, Florence, §88, p15.
- of St. Vitale, Rome, §86, p12.
- of Sainte Chapelle, Paris, §87, p26.
- of Salisbury Cathedral, §87, p120.
- of Siena Cathedral, §87, p66.
- of Strozzi Palace, Florence, §88, p19.
- of Toledo Cathedral, §87, p99.
- of Town Hall, Amsterdam, §88, p140.
- of Trajan's basilica, Rome, §85, p121.
- of Trajan's column, Rome, §85, p119.
- of Ulm Cathedral, §87, p55.
- of Warmington Church, Northamptonshire, §87, p157.
- of Wells Cathedral, §87, p131.
- of Westminster Abbey, §87, p132.
- of Winchester Cathedral, §87, p123.
- of Worms Cathedral, §86, p88.
- of York Minster, §87, p129.
- Plateresco, §88, p143.
- Plate-tracery, §87, p12.
- Podium, §85, p103.
- Pointed arches in Gothic architecture, Introduction of, §87, p4.
- Pompeian houses, §85, p124.
- Pompeii, §85, p123.
- House of Pansa, §85, p124.
- Porta Triumphalis, §85, p115.
- Pozzualana, §85, pp100, 127.
- Prehistoric Age, Greek, §85, p60.
- Presbyterium, §85, p138.
- Proportions of Roman Corinthian and Composite orders, §85, p135.
- of Roman Doric order, §85, p132.
- of Roman Ionic order, §85, p135.
- of Roman orders, §85, p130.
- of the Tuscan order, §85, p131.
- Propylon, §85, p17.
- Prothesis, §85, p139.
- Prothyron, §85, p72.
- Public baths, Roman, §85, p107.
- buildings and mansions, Style of English, §88, p151.
- buildings, Roman, §85, p101.
- Pyons, §85, p17.

- Pyramidal and columnar architecture, §85, p16
- Pyramidion, §85, p19.
- Pyramids, §85, p11.

R

- Radcliffe Library, Oxford, §88, p176.
- Library, Oxford, Plan of, §88, p181.
- Ramesseum, §85, p18.
- Ramesseum, Plan of, §85, p17.
- Rathhaus, Brunswick, §87, p52.
- Ratisbon Cathedral, §87, p50.
- Cathedral, Plan of, §87, p52.
- Ravenna, St. Vitale, §86, p15.
- Recent Continental architecture, §88, p198.
- English architecture, §88, p194.
- Redentore, Venice, Plan of, §88, p53.
- Regulæ, §85, p78.
- Renaissance and its founders, English Classic, §88 p151.
- Architectural examples of French, §88, p72.
- Architectural examples of Italian, §88, p14.
- architecture, §88, p1.
- architecture, English, §88, p147.
- architecture, Examples of Belgian and Dutch, §88, p135.
- architecture, Examples of English, §88, p155.
- architecture, Examples of German and Austrian, §88, p123.
- architecture, Examples of Spanish, §88, p143.
- architecture, Florentine, §88, p14.
- architecture, German and Austrian, §88, p119.
- architecture, Origin and development of, §88, p1.
- architecture, Periods of English, §88, p149.
- architecture, Periods of French, §88, p69.
- architecture, Periods of Italian, §88, p11.
- architecture, Principal periods of Spanish, §88, p143.
- architecture, Spanish, §88 p142.
- Baroque period of German and Austrian, §88, p122.
- Belgian and Dutch, §88, p134.
- buildings, Details of Belgian and Dutch, §88, p141.
- buildings, Details of English, §88, p184.
- buildings, Details of French, §88, p109.
- buildings, Details of German and Austrian, §88, p131.
- buildings, Details of Italian, §88, p54.
- buildings, Details of Spanish, §88, p146.
- buildings, Early English, §88, p155.
- buildings, English Classic, §88, p160.
- Classic period of French, §88, p71.
- Classic revival of French, §88, p71.
- columns, English, §88, p187.
- Dawn of Italian §88 p5.
- Definition of. §88, p1.

Renaissance—(Continued)

- Early English, §88, p149.
 - Early period of French, §88, p70.
 - Early period of German and Austrian, §88, p121.
 - Early period of Italian, §88, p11.
 - French, §88, p67.
 - Growth of the, §88, p2.
 - house decoration, English, §88, p150.
 - houses, Plans of English, §88, p150
 - Italian, §88, p4.
 - Middle period of Italian, §88, p12.
 - mouldings, French, §88, p115.
 - ornamentation, English, §88, p189.
 - ornamentation, French, §88, p117.
 - ornamentation, Italian, §88, p59.
 - periods, Classification of French, §88, p69.
 - periods, Distinctive features of French, §88, p69.
 - periods, French, §88, p69.
 - Periods of German and Austrian, §88, p121.
 - revival, English, §88, p198.
 - Rococo period of French, §88, p71.
 - Undeveloped Classic period of German and Austrian, §88, p122.
- Rheims Cathedral, §87, p21.
- Cathedral, Plan of, §87, p21.
- Riccardi Palace, Florence, §88, p14.
- Palace, Florence, Plan of, §88, p14.
- Rock-cut tombs, §85, p15.
- Rococo period of French Renaissance, §88, p71.
- period of Italian Renaissance, §88, p14.
- Roman alterations in Greek orders, §85, p136.
- amphitheatres, §85, p114.
 - arched-roof construction, §85, p99.
 - architecture, §85, p93.
 - architecture, Characteristics of, §85, p99.
 - architecture, Examples of, §85, p101.
 - art, §88, p7.
 - baptisteries, §85, p143.
 - basilicas, §85, p120.
 - bridges and aqueducts, §85, p119.
 - buildings, Detail of, §85, p126.
 - buildings into churches, Conversion of, §85, p137.
 - circuses, §85, p115.
 - columns, §85, p130.
- Corinthian and Composite orders, Proportions of, §85, p135.
- dome construction, §85, p100.
 - Doric order, Proportions of, §85, p132.
 - houses, §85, pp101, 122.
 - Ionic order, Proportions of, §85, p135.
 - monumental columns, §85, p117.
 - monuments, §85, p101.
 - orders, Details of, §85, p130.
 - orders, Proportions of, §85, p130.
 - ornamentation, §85, p136.

Roman—(Continued)

- palaces, §85, p121.
 - public baths, §85, p107.
 - public buildings, §85, p101.
 - temples, §85, p103.
 - theatres, §85, p111.
 - tombs, §85, p118.
 - triumphal arches, §85, p116.
 - vault construction, §85, p99.
- Romanesque architecture, §86, p58.
- architecture, Defects of, §87, p2.
 - architecture, Development and characteristics of, §86, p58.
 - architecture, Development of, §86, p59.
 - architecture, Distinctive features of German, §86, p88.
 - architecture, Distinctive features of Italian, §86, p105.
 - architecture, Example of Central Italian, §86, p105.
 - architecture, Examples of French, §86, p70.
 - architecture, Examples of German, §86, p88.
 - architecture, French, §86, p66.
 - architecture, German, §86, p84.
 - architecture, Italian, §86, p100.
 - art, §87, p97.
 - art, Early, §86, p58.
 - buildings, Detail of French, §86, p80.
 - buildings, Detail of German, §86, p94.
 - columns, French, §86, p82.
 - columns, German, §86, p96.
 - columns, Italian, §86, p117.
 - Details of Italian, §86, p116.
 - Distinctive features of French, §86, p70.
 - Distinctive features of Northern Italian, §86, p103.
 - Examples of Northern Italian, §86, p103.
 - Examples of Southern Italian, §86, p112.
 - fireproof construction, §86, p61.
 - Northern Italian, §86, p103.
 - openings in buildings, German, §86, p97.
 - ornamentation, French, §86, p82.
 - ornamentation, German, §86, p97.
 - ornamentation, Italian, §86, p117.
 - or Norman architecture, English, §86, p118.
 - Southern Italian, §86, p112.
 - terms, Definition of, §86, p58.
 - vault construction, §86, p62.
- Rome, Arch of Constantine, §85, p116.
- Arch of Titus, §85, p116.
 - Basilica of Maxentius, §85, p120.
 - Baths at Caracalla, §85, p108.
 - Cloisters of St. Paul's, §86, p109.
 - Cloisters of St. Paul's Church at, §86, p109.
 - Colosseum, §85, p114.
 - Cortile of Cancellaria Palace, §88, p24.
 - Farnese Palace, §88, p24.

Rome—(Continued)

- Giraud Palace, §88, p24.
- Notes on, §85, p93.
- Pantheon, §85, p105.
- Plan of Farnese Palace, §88, p24.
- Plan of Palace of Capraola, §88, p36.
- Plan of Piazza of St. Peter's, §88, p32.
- Plan of St. Vitale, §86, p12.
- St. John Lateran, §88, p33.
- St. Peter's, §88, p27.
- Temple at Vesta, §85, p105.
- Temple of Fortuna Virilis, §85, p103.
- Tomb of Cæcilia Metella, §85, p118.
- Trajan's basilica, §85, p120.
- Trajan's column, §85, p117.
- Villa Medici, §88, p36.
- Rosette, §85, p27.
- Rostra, §85, p103.
- Rouen, Palais de Justice, §87, p28.
- Plan of Abbey Church of St. Ouen, §87, p28.
- St. Maclou, §87, p27.
- Royal Exchange, London, §88, p183.
- Ruhmeshalle, Munich, §88, p129.
- Rusticated work, §88, p55.
- Rutland, Cottesmore Church, §87, p160.

S

- Sacrarium, §85, p138.
- St. Andrea, Mantua, §88, p18.
- Andrea, Mantua, Plan of, §88, p18.
- Chapelle, Paris, §87, p24.
- Croce, Florence, §87, p66.
- Croix, Bordeaux, Church of, §86, p77.
- Etienne du Mont, Church of, §88, p81.
- Front, Périgueux, §86, p75.
- Front, Périgueux, Plan of, §86, p74.
- George's Hall, Liverpool, §88, p181.
- Gregorio, Spain, Cathedral of, §87, p109.
- Jacques, Liege, Church of, §87, p84.
- Jacques, Liege, Plan of Church of, §87, p88.
- John Lateran, Rome, §88, p33.
- John, Westminster, Church of, §88, p173.
- Maclou, Rouen, §87, p27.
- Maria della Saluta, Venice, §88, p45.
- Maria del Pi, Barcelona; Church of, §87, p100.
- Maria del Pi, Barcelona, Plan of, §87, p102.
- Mark's, Venice, §86, p15.
- Mark's, Venice, Plan of, §86, p16.
- Martin-in-the-Fields, Church of, §88, p173.
- Martin-in-the-Fields, Plan of, §88, p180.
- Martin, Ludgate Hill, London, Plan of, §88, p165.
- Mary Abchurch, London, Plan of, §88, p165.
- Mary-le-Bow, London, Plan of, §88, p165.
- Michel, Mont, §87, p27.
- Ouen, Rouen, Abbey Church of, §87, p26.
- Ouen, Rouen, Plan of Abbey Church of, §87, p28.

St.—(Continued)

- Paul's Cathedral, London, §88, p163.
- Paul's Cathedral, London, Original plan of, §88, p169.
- Paul's Cathedral, London, Plan of, §88, p171.
- Paul's Church, at Rome, Cloisters of, §86, p109.
- Peter's, Rome, §88, p27.
- Peter's, Rome, Proposed plans of, §88, p28.
- Sophia, Constantinople, §86, p12.
- Sophia, Constantinople, Plan of, §86, p10.
- Spirito, Florence, §88, p15.
- Spirito, Florence, Plan of, §88, p15.
- Sulpice, Paris, §88, p92.
- Trophime, Arles, §86, p74.
- Vitale, Rome, Church of, §86, p15.
- Vitale, Rome, Plan of, §86, p12.
- Sainte Chapelle, Paris, Plan of, §87, p26.
- Salisbury Cathedral, §87, p120.
- Cathedral, Plan of, §87, p120.
- San Michele, Pavia, Church of, §86, p103.
- Scarabæus, §85, p26.
- Scotia, §85, p75.
- Segovia Cathedral, §87, p102.
- Seven Stars of Heaven, §85, p37.
- Sevilla, Alcazar, §86, p40.
- Seville, Hôtel de Ville, §88, p143.
- Sexpartite English Gothic vaulting, §87, p110.
- Sgraffito, §88, p47.
- Shaft, §85, p55.
- Siena Cathedral, §87, p66.
- Cathedral, Plan of, §87, p66.
- Soffit, §85, p79.
- Somerset House, London, §88, p176.
- Sorbonne, Paris, Church of, §88, p89.
- Spain, Notes on, §87, p94 ; §88, p142.
- Spanish Decadent period, §88, p143.
- Gothic architectural examples, §87, pp96, 99.
- Gothic architecture, §87, p94.
- Gothic buildings, Details of, §87, p102.
- Gothic cathedrals and churches, §87, p99.
- Renaissance architecture, §88, p142.
- Renaissance architecture, Examples of, §88, p143.
- Renaissance architecture, Principal periods of, §88, p143.
- Renaissance buildings, Details of, §88, p146.
- Speyer Cathedral, §86, p92.
- Spina, §85, p115 ; §86, p8.
- Stadium, §85, p111.
- Stalactite pendentives, §86, p36.
- Stamford, All Saints', §87, p160.
- Strozzi Palace, Florence, §88, p18.
- Palace, Florence, Plan of, §88, p19.
- Styles, Classification of, §85, p4.
- Stylobate, §85, p55.
- Substrate, §85, p138.

Sudatorium, §85, p108.
Sussex, Bodiam Castle, §87, p171.

T

Tablinum, §85, p125.
Tænia, §85, p78.
Temple of Apollo, §85, p123.
 of Fortuna Virilis, §85, p103.
 of Fortune, §85, p123.
 of Jove, §85, p123.
 of Jupiter Tonans, §85, p103.
 of Mars Ultor, §85, p103.
 of Mercury, §85, p123.
 of Vesta, §85, p105.
Temples and palaces, West Asiatic, §85, p37.
 Egyptian tombs and, §85, p11.
 of Greece, §85, p58.
 Roman, §85, p103.
Tepidarium, §85, p108.
Tetrastyle, §85, p59.
Thalamos, §85, p72.
Theatre of Marcellus, §85, p112.
Theatres, houses, and tombs, Greek, §85, p71.
 Roman, §85, p111.
Thebes, Statue of Memnon, §85, p20.
Therma, §85, p100.
Tholus, §85, p69.
Thrust, §86, p61.
Thymele, §85, p71.
Toledo, Alcazar, §88, p145.
 Cathedral, §87, p99.
 Cathedral, Plan of, §87, p99.
Tombs and temples, Egyptian, §85, p11.
 Persian palaces and, §85, p45.
 Roman, §85, p118.
Tonans, Temple of Jupiter, §85, p103.
Torus, §85, pp11, 76.
Tournai Cathedral, §87, p79.
Tower of schools, Oxford, §88, p158.
 of the Kutab, Delhi, §86, p42.
 of the Winds, §85, p69.
Town Hall, Amsterdam, Plan of, §88, p140.
Trabeated system, §85, p4.
Trajan's basilica, Rome, Plan of, §85, p121.
 column, §85, p117.
 column, Rome, Plan of, §85, p119.
Travertine, §85, p114.
Triclinium, §85, p125.
Triforium, §87, p5.
Triglyphs, §85, pp55, 78.
Triumphal arches, Roman, §85, p116.
Triumphalis, Porta, §85, p115.
Tufa, §85, p95.
Tumuli, §85, p2.
Tuscan order, §85, p101.

Tuscan—(Continued)
 order, Proportions of, §85, p131
Tympanum, §85, p81 ; §86, p74.

U

Ulm Cathedral, §87, p50.
 Cathedral, Plan of, §87, p55.

V

Vault, Barrel, §85, p100.
 construction, Roman, §85, p99.
 construction, Romanesque, §86, p62.
Velarium, §85, p115.
Vendramine Palace, Venice, §88, p39.
Venetian architecture, §88, p39.
 art, §88, p9.
 palaces, §87, p189.
 window, §88, p56.
Venice, Cornaro Palace, §88, p42.
 Ducal Palace, §88, p42.
 Library of St. Mark, §88, p43.
 Mint, §88, p43.
 Palazzo del Consiglio, §88, p47.
 Pesaro Palace, §88, p45.
 Piazza of St. Mark, §88, p47.
 Plan of Piazza of St. Mark, §88, p48.
 Plan of Redentore, §88, p53.
 Plan of St. Mark's, §86, p16.
 St. Mark's, §86, p15.
 Santa Maria della Saluta, §88, p45.
 Vendramine Palace, §88, p39.
Veronese art, §88, p9.
Versailles Palace, §88, p96.
 Petit Trianon, §88, p102.
 Plan of Chapel of, §88, p97.
 Plan of Palace of, §88, p96.
Vesta, Temple of, §85, p105.
Vienna, Doorway of Old Rathaus, §88, p123.
 Karls Kirche, §88, p128.
 Parliament House, §88, p130.
 Plan of Karls Kirche, §88, p129.
Villa Medici, Rome, §88, p36.
Virilis, Temple of Fortuna, §85, p103.
Vousoirs, §88, p59.

W

Wall and ceiling decoration, Egyptian, §85, p26.
Waltham Abbey, Essex, §86, p129.
Warmington Church, Northamptonshire, Plan of, §87, p15.
Warwick Castle, §87, p167.
Washington, Capitol at, §88, p202.
 Library of Congress, §88, p210.
Water Gate, York House, London, §88, p162.

Wells Cathedral, §87, p128.
 Cathedral, Plan of, §87, p131.
 West Asiatic architecture, §85, p30.
 Asiatic architecture, Characteristics of, §85, p35.
 Asiatic architecture, Examples of, §85, p37.
 Asiatic temples and palaces, §85, p37.
 Westminster Abbey, §87, p129.
 Abbey, Plan of, §87, p132.
 Whitehall Palace, London, Design for the, §88,
 p163.
 Palace, London, Proposed plan of, §88, p164.
 Winchester Cathedral, §86, p128, §87, p123.
 Cathedral, Plan of, §87, p123.
 Window, Venetian, §88, p56.
 Winds, Tower of the, §85, p69.
 Winged disc, §85, p26.
 Wollaton Hall, Nottingham, §88, p157.
 Worms Cathedral, §86, p92.

Worms—(Continued)
 Cathedral, Plan of, §86, p88.
 Wren, Christopher, §88, p152.
 Wren's City churches, §88, p164.

X

Xystus, §85, p125.

Y

York Minster, §87, p128.
 Minster, Plan of, §87, p129.
 Ypres, Cloth Hall, §87, p88.

Z

Ziggurats, §85, p37.
 Zwinger, Dresden, §88, p127.





P
AP 56

